The Builder.

VOL. LXXXIV.—No. 3159. APRIL 4, 1903.

ILLUSTRATIONS.

Japanese Ornament.—Plate V. ..... From Original Drawings.
Business Premises, Bombay ..... Mr. John Cash, F.R.I.B.A., and Mr. Starmer Hack, A.R.I.B.A., Architects.
Reredos and Altar Frontal, St. Peter's, Newton-le-Willows ..... By Messrs. Shrigley & Hunt.
Cartoons for Stained Glass Panels: "The Four Seasons" ..... By Mr. Paul Woodroffe.
Sketches in Belgium ..... By Mr. E. Stanley Mitton.

Blocks in Text.

Plan of Sta. Maria Antiqua ..... Page 352
Diagrams Illustrating Decorative Art of the Japanese—IV... Pages 355, 356
Messrs. Macmillan's Premises, Bombay. Plan ..... Page 364
Willesden Parish Infirmary. Block Plan ..... ,, 366

CONTENTS.

Papers of the British School at Rome 351
Notes 352
The Decorative Art of the Japanese.—IV. 355
Letter from Paris 356
The Royal Institute of British Architects 356
Incorporated Association of Municipal and County Engineers 360
Competitions 362
Regulations Relating to Protection from Fire 362
Architectural Societies 363
Engineering Societies 363
Illustrations:—
Japanese Ornament.—Plate V. 364
New Premises, Bombay for Messrs. Macmillan & Co., Publishers 364
Reredos, St. Peter's, Newton-le-Willows 364
Illustrations:—
Cartoons for Stained-glass Panels 364
Sketches in Belgium 364
The Surveyors' Institution 364
The London County Council 365
Workhouse Infirmary, Willesden 366
Applications under the London Building Act, 1894 366
Books Received 367
Correspondence:—
The Artistic Treatment of Engineering Works 367
The North Elmham Ruin 367
Proposed Quantity Surveyors' Association 367
The Lecture on Fire Protection before the Society of Arts .. 367
Is a Hotel a "Domestic Building"? 368
Obituary 368
General Building News 368
Sanitary and Engineering News 369
Miscellaneous 369
Capital and Labour 370
Legal:—
Action by an Architect 370
Architect's Successful Action 370
Employers' Liability Act 370
Drainage of Industrial Dwellings 370
Successful Appeal by the London County Council 372
Patents of the Week 372
Meetings 372
Some Recent Sales of Property 372
Prices Current of Materials 373
Tenders 374

Papers of the British School at Rome.

THE first volume of the Papers of The British School at Rome, recently issued, has an interest as being the first of a series, apart from the value of its contents. It indicates what sort of study the School has first essayed, in the large and varied field at its disposal; a field restricted unfortunately to research above ground, as the Italian law does not permit excavation to be carried out by foreigners in Italy. But if it is more of a school proper, and less of an exploration centre, than the kindred society at Athens, the school at Rome should be distinctly helpful to English architects and others sojourning in Rome for purposes of study; and such students are in fact, beginning to identify themselves with it.

The present volume contains only two papers, but they are very solid ones, which, "taken together aptly illustrate the variety and richness of the field which Rome and Italy offer to the student," to quote from Professor Pelham's preface to the volume. The first of these papers, by Mr. G. McN. Rushforth, the present Director of the school, is on the Church of "Sta. Maria Antiqua," recently discovered in the Forum excavations. The second, by Mr. T. Ashby, junior, begins a series of papers on the "Classical Topography of the Roman Campagna." Both subjects are exclusively archæological, and both are treated by men who know intimately what they are writing about. Mr. Rushforth, in the past, has been a diligent student of Italian art, and has written ably on Carlo Crivelli. Mr. Ashby, a former Craven Fellow of Oxford, through his long residence in Rome, should be better qualified than most to deal with his vast and difficult subject.

Both contributions are, from the nature of the case, outside of ordinary criticism—at least, in essentials. Mr. Rushforth's paper however, is necessarily very much limited. He has merely been an onlooker, and with him cannot rest any complete publication of a work which has been carried out by the Italian authorities, and will presumably be fully illustrated by them. This he has stated in his preface, adding that "the present description must be regarded chiefly as a contribution to our knowledge of Byzantine iconography as it was understood and practised at Rome in the eighth century." His continuing sentence does not seem quite satisfactory:—

> "It may be added that the damaged condition of all but a few of the pictures makes a careful description almost as valuable for iconographical purposes as reproduction, and that their interest consists rather in the choice and treatment of subjects than in their artistic character."

However, Mr. Rushforth's saving word "almost," coupled with the fact that a large part of the publication of Byzantine iconography must rest with [description, makes his plea somewhat more justifiable than it appears at first sight. He has certainly gone most fully into that useful branch of the subject, the elucidation of inscriptions; and in any case illustration of the pictorial side of the art, by photo or colour-plate, is rarely quite satisfactory. Perhaps in this line the French have succeeded best, as in their book on the church at Daphnæ, near Athens, with its fine photographic plates and no attempt at colour.

It may safely be said that the church of Sta. Maria Antiqua is of little interest to the architect in its present condition. It is a mere shell, in places almost razed to the ground. But as a book, interesting and valuable, it gives us an almost unique idea of eighth century church decoration in Italy, or, to be more particular, in Rome. The plan, unfortunately, is not original in essentials, but on the other hand, it gives us ideas about the origins of many details in later church planning. It is founded on a Roman building, which "completes the vast brick structure known as the Temple of Augustus, by filling up the space between the back wall of the temple and the steep N.W. face of the Palatine Hill. The various parts of the block condition (*sic*) one another and belong to a single plan; and the date of its construction is the reign of Hadrian."

This plan is practically that of a Roman house, and Mr. Rushforth has shown this by a comparison between it and some Roman houses on the Capitoline Hill (p. 22). He points out that the type of plan, with its narthex, central space flanked by aisles, and apse flanked by side chambers, exactly resembles contemporary (and earlier) Byzantine churches; giving St. Sophia at Salonica as an illustration.

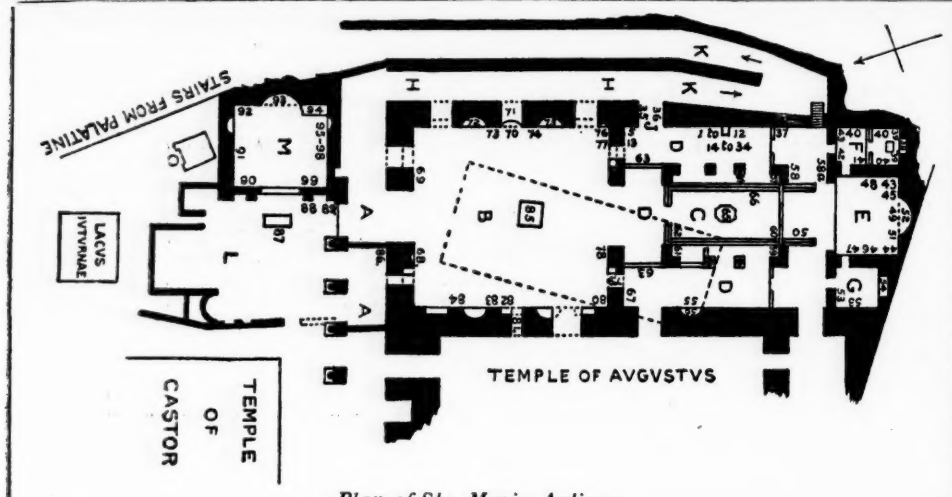
Interesting points of detail in the plan are [(1) the piscina, under the floor of the atrium of the Hadrianic building forming the basis of the church, and of earlier date, shown by dotted lines on the plan (a reduction of which, from the plan given on page 18 of the book, is subjoined). (2) The graves of the 8th century church, also found under the floor of the atrium.

3. The octagonal base in the centre of the peristylium, apparently belonging to the ambo of the church (p. 90).

4. The fragment of paving in the sanctuary, an echo of the fine geometrical style of late Roman art.

The first paragraph of Mr. Rushforth's Introduction is terse and to the point. He specially emphasises the historical value of the eighth century, and as he states further on, painting of that time in Italy is very rare. Though lacking the art of the earlier sixth century work, and the later ninth and following centuries—belonging, in fact, to a middle period, comparatively sunk in barbarism, the period [still forms an important link in the chain of art history. The Introduction also contains important information concerning the motives of the decorative scheme, its place in contemporary art, and the question of the date of the church.

After describing, in a few pages, "the original building," Mr. Rushforth devotes the remainder of his paper to a "description of the church." He describes the conversion of the building into a church by the addition of an apse and an enclosed choir, as at St. Clemente, and then goes on to discuss the various parts, with their paintings in detail. By a system of lettering and figuring on his plan he manages to make his descriptions



Plan of Sta. Maria Antiqua.

clear in their sequence, but the addition of a small table of the principal sections of the building, on the plan-sheet, would have been an improvement. One cannot but regret also the absence of even only one good drawing or photograph of a representative piece of wall decoration, which would give the reader a standard of judgment at once. The only illustrations of the painting given are two line sketches—a sketch showing position of hands with flower, p. 51, and "The Descent into Hell" in the appendix, p. 116. Both are too slight to be of more than diagrammatic value.* In his descriptions, however, Mr. Rushforth carries us along with him in a most interesting manner; and it is, perhaps, as well for our interest in certain scenes that we are enabled to form ideal conceptions of them, and be led on unsuspectingly to a study of the curious details of Byzantine martyrology under the guidance of a ready writer, who is at home in his subject.

A specially interesting point is the analysis of the paintings of the apse, as belonging to a better, more classical manner than those of the rest of the church. It is fortunate that the eastern end preserves these paintings, and those in the adjacent chapel of SS. Quiricus and Julitta, almost intact as to general scheme, owing to the preservation of the roof at this point, especially as "the three walls of the sanctuary exhibit a single design." This is evidently the most interesting part of the church, and we are given some descriptions of detail in it. Concerning the "Crucifixion" over the apse we read that "even in their damaged condition some of the heads are of great beauty." There is an appendix to the paper, treating of the "Descent into Hell" in Byzantine art, and giving one example in line diagram from Sta. Maria Antiqua. The Early Saxon sculpture from Bristol Cathedral illustrating the same subject is also given.

Mr. Ashby's contribution to the volume—"The Classical Topography of the Roman Campagna"—is interesting at the outset as a choice of subject. It is not often in this age of specialism that a student is found devoting himself deliberately to a large theme embracing many fields of research, and which has been treated before by others. But if Mr. Ashby's choice has not the merit of originality, he is to be warmly congratulated on trying to bring the light of newer scientific inquiry to a subject which has been ably, but very differently, treated by Piranesi and Canina. Nowadays, we too much lack the patience and the largeness of idea required in treating such studies.

The Roman Campagna has a melancholy interest for every one, and those who approach Rome from the south cannot but feel powerfully the solemnity and grandeur of the ruins which rise to sight, set, as they are, in the midst of a dead country:—

> "The Champaign, with its endless fleece
> Of feathery grasses everywhere!
> Silence and passion, joy and peace,
> An everlasting wash of air—
> Rome's ghost since her decease."

From Rome itself, also, the great antique roads—the mighty arms of the capital which stretched far into the populous south—offer a never-ending interest to those who have leisure to examine them mile by mile; and it would be hard to recommend more fascinating paths to a man of philosophic mind than the ancient Via Appia or the Via Latina.

In his introduction, however, we are sternly reminded by Mr. Ashby that he has "purposely restricted" himself to "the dry bones of the subject." He has taken three main roads, the Via Collatina, the Via Praenestina, and the Via Labicana, to (1) determine their course, and (2) "to describe the ancient remains which exist near each road, as evidence of the inhabited character, or the reverse, of the country through which it runs, and of its comparative importance or unimportance." He goes on to hedge himself in, in rather a disappointing manner, by stating the incompleteness of the present papers, for various reasons. Now if the formidable series of maps at the end of the volume are all Mr. Ashby's own, as far as details are concerned (a fact—serious blunder—which is not stated) there would be no need for any excessive humility on the part of the author. For good competent maps, carefully corrected and made up to date by the author, are the very nerves and sinews of such a paper as this. But as it is, we must just accept Mr. Ashby's qualifications.

To describe the paper in any detail, or even to give a *résumé* of its main points, is quite impossible in a short notice. It is sufficient to say that the three roads are taken and described, each in turn, mile by mile. The abundance of references somewhat makes up for the want of many architectural illustrations, but we should have liked to have had some plans and sections of such interesting things as the water reservoirs and drainage mentioned in pp. 155, 156, and 158. The plan of a tomb given on p. 169 shows the important influence such structures must have had on the development of later Byzantine churches.* A section of the tomb would have been valuable, and also a statement of the precise reasons for thinking that the central part was left open.

The Temple and Forum at Gabii, on the Via Praenestina (pp. 182 *et seq.*), are given in some detail, and the photograph given along with the plans is useful. The photograph of the apse of St. Primitivus at Gabii, showing alternate bands of *opus reticulatum* and plain brick, is another reminder of the enormous debt that the Byzantine Greeks owed to the Romans in the development of their building forms. The photograph of the Via Praenestina, given at p. 200, is one of the best in the volume, and indicates the true character of an ancient Roman road.

Generally speaking, the photographs, of which there are not too many, seem to be of that most valuable kind—snapshots taken by the author entirely for his own purposes. The way they suffer in publication is no fault of Mr. Ashby's, but concerns the question of the get-up of volumes of this kind. The "texture" which only photographs of ancient remains can give is of great importance. Almost every other quality of illustration can be better obtained by a good drawing, unless the photograph be superbly reproduced. For this it is necessary to have special plate paper for the illustrations, and here we are confronted with the old alternative (which always crops up) of relegating such illustrations to the end of the volume—a method unhesitatingly adopted by the French and the Germans. There is no doubt, however, that to illustrate in the text is a far superior method, and to do this properly an example might be borrowed from some American magazines, which print all illustrated pages on special plate paper and the others on plain paper.

A slight drawback to Mr. Ashby's fine series of maps is the absence of scales on the maps themselves; and (more serious) the absence also of anything that might bring them into real touch with the volume, as they are not mentioned in Mr. Ashby's letterpress at all. It may be questioned, also, if contour lines give any real compensation for the confusion they cause on a map, unless they are shown very faintly, as on the Ordnance Survey sheets.

The volume is got up in a similar style to the Annual of the British School at Athens, in a workmanlike cover and paper.

NOTES.

Proposed Lambeth Bridge.

THE Report of the Bridges Committee of the London County Council on the proposed new Lambeth Bridge is given in our report of the proceedings of the County Council on another page. It is stated that the question of gradients practically decides that the spans must be of steel and not of masonry. The County Council cannot raise the approaches more than 3 ft. 10 in. above the present level, and it is stated that the requirements of the Thames Conservancy would render it impossible to erect a granite bridge with a less gradient than 1 in 25, which is described in the Report as about the

* See the March number of *Harper's Magazine* for an illustration of a fresco at Sta. Maria Antiqua, in Professor Boni's article on the Recent Forum Excavations.

* See Lethaby and Swainson's "St. Sophia," p. 201.

same as the north gradient of Southwark Bridge. We should like to see that reduced to measurement; Southwark gives the impression of being a steeper gradient than that. We have often wondered whether the Thames Conservancy are not allowed to be too autocratic in their requirements, and whether they ought to have the power to deprive us of any more bridges of ornamental character, by requirements which may not be so necessary as the Conservancy choose to think. In the present case, however, their demand for 15 ft. headway does not seem extravagant, and we are informed by the County Council Engineer that this condition is incompatible with the construction of a granite bridge. For the present, of course, we must accept the statement, not having data to decide on it, though one cannot help remarking on the persistency with which engineers always report in favour of a steel bridge whenever they can find an excuse for doing so. However, if a steel bridge is really unavoidable it can of course be made an artistic object, or avoid being an ugly one, if properly treated; but the London County Council have no one in their employ who can do this; and unless the advice of an independent artist is taken, we shall probably have another monstrosity like Blackfriars Bridge.

Rating of Ground Values.

THE debate in the House of Commons last week upon the rating of the capital value of land very nearly resulted in the second reading of the measure. The narrowness of the division is not surprising, since it is felt that the taxpayer needs every penny that can be raised, and it is well understood that large sums are made by the sale of building land, which escapes taxation. A piece of building land may be unused for several years, the owner paying mere nominal sums by way of taxation, and then he obtains a large sum for it from several purchasers. But, on the other hand, this matter is part only of a large question—one which obviously can only be dealt with in a Government measure. Nor is it clear, even, if ground values are to be taxed, what way this had best be done; it may be that a tax on transfers would be most desirable. It is pretty clear, however, that public opinion is inclined to favour some form of taxation by which what is popularly called unearned increment may pay more to the Exchequer.

Compensation for Church Property.

A CURIOUS point has arisen out of the arbitration which has been held to ascertain the value of the site upon which the Church of St. Mary Woolnoth stands, and which is being acquired by the City and South London Railway for the purpose of their undertaking. The arbitrator had to seek the opinion of the Court of Appeal on which of the three bases the compensation should be assessed—1. That the site of the church could never be used for any other purpose. 2. That the site under some Act of Parliament, or some scheme under the Union of Benefices Act, might become available for building at a time to be fixed by the arbitrator. 3. That the land might immediately be made available for building. The respective figures under each head were 90,628*l.*, 136,421*l.*, and 143,548*l.* It appeared that in 1899 a scheme for pulling down the church and for selling the site by tender had been approved, and the Court of Appeal have decided in favour of the second basis, although by their private Act of Parliament the railway company were under terms to maintain the church.

An Architect's Case.

THE case of Adams *v.* Kynoch, recently decided by Mr. Justice Wright, deserves a few words of comment, although it decides no new principles of law. The plaintiff, an architect, was employed by a company known as the Kynoch Estate Company, Limited, in and about the erection of an hotel upon their lands. Subsequently, this company went into voluntary liquidation, and its assets and liabilities were taken over by a company called Kynoch, Limited. The plaintiff alleged that he had notice of this assignment, and consented to Kynoch, Limited, being substituted as his debtors, and now sued them for his remuneration, but the defendant company denied that there had been any novation of the contract with the plaintiff, and the Court decided in their favour, holding that there was no evidence of novation. In considering this case, it must be remembered that certain contracts are capable of being assigned by one person to another, but not contracts such as the one in question, which involve special personal qualifications in which a substitution of parties can only be effected by novation, to which, however, both the parties to be bound must have agreed. In the present case the defendants had not so assented, but the plaintiff had his remedy still against the original company he contracted with, for liquidation, of itself, does not rescind a contract in the absence of some act showing an intention to repudiate the contract or to render its performance impossible. It must be observed that, in the case under consideration, the work done by the plaintiff must have been completed before the transfer to the Kynoch Company was effected, for had this company actually accepted any benefit from the services of the plaintiff, they would have rendered themselves liable to pay for them.

Smoky Chimneys *v.* Quiet Enjoyment.

THE case of Davies *v.* Town Properties Investment Corporation, Ltd., as decided by the Court of Appeal, raises some interesting questions to householders in towns. Some offices had been let by one Lee to the plaintiff on a lease for fourteen years, which lease contained a covenant for "quiet enjoyment." Subsequently Lee assigned the reversion of the premises expectant on the determination of the lease to the defendant company. The company subsequently purchased other premises next door, but from other vendors, and having pulled down the buildings on this site, erected others in their place, but of much greater height, and, in consequence, caused the plaintiff's chimney to smoke. The plaintiff claimed an injunction against the defendants and a declaration of breach of the covenant, but failed in his action. The main ground of the decision appears to be that the interruption must be the act of the lessor or those claiming under him the right to do the act complained of, whereas now the acts complained of were done under the title obtained not from the plaintiff's lessor, but from an independent source, the man next door. The case at present is very shortly reported, and some observations seem to have been made on the case of Tebb *v.* Cane, which at present has been the authority for such an inconvenience constituting a breach of this covenant where it has been caused by the grantor of the title or some one claiming under him. We shall revert to this subject when a fuller report of the case appears.

Mortgagees and Hire Purchase Agreements.

THE case of Lyon *v.* London City and Midland Bank raised recently a question of importance to owners of shops, manufactories, &c., but on which some uncertainty appears to exist in law. The facts of the case were, shortly, that the owner of the Brighton Hippodrome had entered into a hiring agreement with the plaintiffs in the case for certain seats to seat the auditorium, the terms of which were that 20*l.* a week should be paid for the hire, with the power to remove the seats on default being made in one week's payment; but there was also an option given the hirer to purchase within three months. The Hippodrome was subsequently mortgaged to the defendant bank, and the bank entered into possession and refused to allow the plaintiffs to remove the seats. The seats were capable of being used without being attached to the freehold, but to satisfy an order of the Brighton Town Council, they had been screwed to the floor. The Court held that they were only attached to the structure for a temporary purpose, analogous to the case of a carpet, and that they never passed to the mortgagees as fixtures. In questions between landlord and tenant, and between life tenants and reversioners relating to fixtures, it has been decided by the House of Lords in the tapestry case that the intention of the parties as well as the object and method of attachment to the freehold have to be regarded. In cases where mortgagees are concerned, the same considerations have been applied, but in disputes in relation to hire purchase agreements the law seems rather to favour the mortgagee, for if the property in dispute is attached to the freehold at all, the onus of proof is laid on the person claiming as against the mortgagee. This seems somewhat hard, for whereas the person letting out chattels has probably no idea that the premises are, or will be, mortgaged, the mortgagee has every opportunity of satisfying himself what security he is taking for his loan if he makes reasonable inquiry, and in any case it is difficult to see how the borrower can give a better title than he himself possesses. There is considerable conflict in the various cases, and we trust that the law may soon be authoritatively settled.

Natural Gas in Sussex.

DURING the last five years paragraphs relating to the discovery of natural gas at Heathfield, a Sussex village some fifty miles from London, have from time to time been published in the daily Press. In accordance with a request of the Royal Commission on Coal Supplies, Professor Dixon visited Heathfield in October last, and collected samples of the gas for analysis. In a paper on the subject, recently communicated to the

Chemical Society by Professor Dixon and Mr. Bone, the percentage composition of the gas is stated to be as follows:—Methane, 93·16; ethane, 2·94; carbon monoxide, 1·00; nitrogen, 2·90. According to this analysis, the heating power of the gas must be fully 50 per cent. greater than that of London coal gas, and the gas apparently closely resembles the natural gas of the United States, which has played so important a part in the production of cheap steel in Pittsburg and other districts. In some of the American natural gas districts the supply of gas is now nearly exhausted, but the commercial value of the total annual supply is still increasing. The value of the natural gas used in America during the year 1902 is stated to have exceeded six million pounds. That natural gas exists in Sussex has been known for more than sixty years, but it is only in recent years than a serious attempt has been made to ascertain whether the gas exists in sufficient quantity to be of any industrial value. Professor Dixon reports that in all the wells which have been sunk gas has been encountered after the bores have penetrated through 300 to 400 ft. of sandstone and marl. The gas issues from the boreholes under a pressure of from 140 to 200 lbs. per square inch, and has for some time been used for driving engines and lighting the railway station and a number of houses in the locality by the incandescent mantle system. Whether the Natural Gas Company's venture will prove a financial success remains to be seen, but the results of the borings will be studied with interest by all geologists and mining engineers.

Smoke from Steam Boilers.

MANUFACTURERS employing steam boilers are generally pleased to adopt measures for minimising the volume of smoke emitted from their factory chimneys, if only for the selfish reason that a smoky chimney indicates the direct waste of so much costly fuel. Other owners of steam boilers are not so particular, and among such may be instanced some public authorities in small towns and rural districts. The following case may serve as an illustration. An architect is commissioned to build a hospital by a board consisting of country shopkeepers, farmers, and, perhaps, a clergyman and one or two lady members. The architect gives an estimate of cost, apportioning therein a sum for engineering work, and, after discussion by the board, he is instructed to make considerable reduction of the cost. Everything is then pared down, and engineering work suffers more severely than any other. A contracting firm is called upon to submit a specification and estimate for engineering work, the amount of which must be kept within pre-ordained limits. Certain essentials must be ensured; the boilers must be able to furnish power required for the generation of electricity, and for driving laundry and other machinery; they must also ensure ample supplies of steam for hot water, heating, cooking, and other apparatus; and none of the machinery and appliances mentioned can be diminished in capacity, for the duty is in each case fixed by the extent of the buildings and the number of inmates. For their own protection, the contracting firm take most excellent care that the installation, so far as it goes, shall be adequate and in every way of such nature that hostile criticism may safely be defied. And yet it is the fact that the plant may be one that no consulting engineer would ever permit himself to recommend. Appliances for saving steam, heat, water, and labour are conspicuously absent, and so are mechanical stokers and apparatus for the prevention of smoke and for the economy of fuel. In due course the hospital is opened, the contractors are paid, the architect is complimented, and everybody is pleased. But, year by year, tons and tons of coal continue to be dissipated from the chimney-shaft in the form of smoke, for the sake of saving an initial expenditure: surely a very false economy.

The Colosseum, St. Martin's-lane, and its Site.

THE new circus and music-hall for which Mr. Frank Matcham has prepared the plans and designs will occupy a site of about 41,000 sq. ft., bounded by St. Martin's-lane, Chandos-street, Bedfordbury, and May's-buildings. Those streets will, it appears, be widened along the new frontages. Chandos-street was laid out in or about 1635, and is named after George Brydges, Lord Chandos, ancestor of the "magnificent" Duke, Pope's "Timon." But in Taylor's-buildings and the west side of Bedfordbury we may still see vestiges of the rookery, formerly known as the Straits of the Bermudas, Porridge Island, once famed for its cook-shops, and the Straits of the Strand. The Bermudas, afterwards called the Caribbee, corrupted by the inhabitants into Cribbee, Islands, together with most of the narrow courts, passages, and purlieus—including Duke's-court, where lived Roger Payne, the celebrated book-binder, Moor's-yard, Church lane and court, Vine street and court, Seymour and Lancaster courts, and the Golden Cross inn—were taken down seventy years ago for the building of St. Martin's-place, Duncannon, Adelaide, King William, and other streets around the church of St. Martin-in-the-Fields. A further clearance was subsequently carried out by the late Metropolitan Board of Works. The new scheme provides for the widening of May's-buildings leading out of St. Martin's-lane into Bedfordbury from 9 ft. to 25 ft., and the removal of the Black Horse, Star and Garter, and other taverns. The two tablets of "May's building," so named after the builder, bear the date "1739;" in that court at No. 18 lived N. Smith, the printseller and publisher of many interesting views of old London. The Sutherland Arms formed the head-quarters of "The Eccentrics," a club of beaux and wits. At the Hole-in-the-Wall, since the Marquis of Granby public-house, by Taylor's-buildings, Claude du Val was captured in 1669. He lies in the graveyard of St. Paul's Church, Covent Garden. On the west side of Bedfordbury stands the Mission Church, erected after designs by the late Sir Arthur Blomfield. The old Black Prince tavern, on the north side of Chandos-street, was pulled down in May, 1889. St. Martin's-place has been altered for the making of Charing Cross-road. On May 22, 1875, we published an illustration of the Provident Institute and Savings Bank, by David Brandon, architect, which was founded in 1816, and closed on the transfer of the accounts to the Post Office Savings Bank in January, 1896; the building is now occupied by Parr's Bank. The library and offices of the Royal Society of Literature (No. 4), by Decimus Burton, 1830-1, were demolished for the laying-out of the south end of that thoroughfare after the passing of the National Gallery Enlargement Act, followed by the removal of the work-house and Hemmings-row.

Iona and the Ross of Mull.

THE Duke of Argyll intends to dispose, by private treaty, of the islands of Iona and Ross of Mull, which have belonged to his house during many generations past. The property extends over some 37,000 acres, and the various farm lands, homesteads, and other holdings yield a rental of nearly 3,000*l.* per annum. In Mull, besides numerous vestiges of Druidical and even earlier forms of religious worship, are situated the ruins of Duart Castle (opposite Oban), a former stronghold of the Macleans when they held sway in the Western Isles. In Morvern stand the ruins of Artornish, an ancient castle of the Earls of Ross and Lords of the Isles, which in later times was acquired by the Macleans of Duart, and those of Killundine; near Tobermory is Aros Castle, a rock-built fortress of the island chiefs, at the middle point of the Sound of Mull. Sailing southwards one passes by Mingarry, a house of the Mac-Ians, a clan of Macdonalds, which Allaster MacDonald captured for Montrose, the Tresharnish islands,

> "And Ulva dark, and Colonsay,
> And all the group of islets gay,
> That guard fair Staffa round."

On the left hand lie Gometray, and in Loch na Keal the island of Inchkenneth, where Sir Allan Maclean and his family, who, with their servants, were the only inhabitants of the island, entertained Dr. Johnson and Boswell. Inch Kenneth formerly had a school of priests served by Icolmkill or Iona. At the head of Loch Buy, on the south coast of Mull, is Moy Castle, a seat of the Mac-Leans. In Iona, well chosen by the Cluniac monks for its fruitful soil, are beds of Tertiary coal, and quarries of red granite close to the sea-shore, which, we believe, supplied material for (new) Blackfriars Bridge and the Albert Memorial in Kensington Gardens.

Forgeries of Pictures.

MR. MACWHIRTER, in a letter in the *Times* of Saturday last, spoke forcibly in regard to the great increase of fraudulent copies of the works of eminent painters. Those who are the favourite subjects among deceased painters are those who had a very marked and individual style, such as Constable and Corot, the prominent characteristics of which may be hit off, though the refinements and the knowledge of the original artist are absent from the copy. It has been possible, however, to make a copy so as to deceive the painter himself, as was the case with Müller, who, with an artist friend, was once entirely taken in by a copy of one of his own works, the forgery being only discovered by the fact that the original canvas had had an oil sketch on the back of it, which was not on the back of the sham picture, the imitator not having thought of looking at the back of the canvas. We have no doubt that these fraudulent imitations are greatly on the increase, and are often very cleverly done; and it would seem that some more severe legislative enactment is necessary to put a stop to it. Mr. MacWhirter's letter may have the effect of putting pur-

chasers on the *qui vive*, and if a good solid case can be brought home to any one, a severe sentence may have some effect in checking what is not only an injury to purchasers of works of art, but an injury to art.

The Cost of a Mediæval Miracle.

A CORRESPONDENT sends us the following remarkable extracts from the accounts of St. Mary's, Louth (*circa* 1500) :—

"*Item.* Paid Robert Boston for the Holy Ghost appearing in the Kirk roof ..... 2s.
Paid Robert Boston for Holy Ghost ..... 2s.
Paid Robert Boston for said Holy Ghost, as appears afore ..... 20d."

The extracts are taken from "Notitiæ Ludæ" or notices of Louth, published for the author by W. Edwards, Louth. Probably the ingenious Robert Boston had contrived a mechanism by which a representation of a dove could be let down from the roof of the church at the desired moment. What strikes one most is the barefaced manner in which the transaction seems to have been entered in the accounts. Was it cynicism, or mere simplicity?

Gladstone at the Abbey.

MR. BROCK'S statue of Gladstone, which has just been "inaugurated" (as the French put it) at Westminster Abbey, is about as fine a piece of sculpture as can well be achieved in the case of a full-length portrait figure in realistic costume; a kind of work which we have always considered to be little adapted for treatment in sculpture. A portrait bust or medallion, with symbolical accessory figures, affords a far better opportunity of producing a work of art. However, various other statesmen are carven there at full length, and at all events the admirers of Gladstone may congratulate themselves on the fact that his is the best statue in the transept, and shines conspicuous by contrast with Boehm's commonplace and badly-posed figure of Disraeli. It must be admitted that Gladstone's head offered the sculptor far the better chance of the two, and Mr. Brock has made the most of it; the head is fine, dignified, and earnest. But he has also posed the figure finely (not the case with the Disraeli statue, which has something of a shambling look), and has taken advantage of the gown which one of Gladstone's Honorary additions, probably, allowed him to wear, to get a broad effect with a costume which naturally falls

"Into great laps and folds of sculptor's work."

The result is a fine and interesting addition to the contents of the national Valhalla.

THE DECORATIVE ART OF THE JAPANESE.—IV.

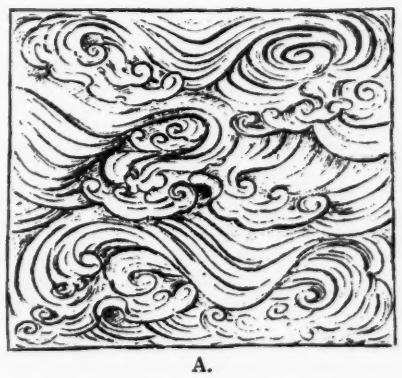
TEMPLE DECORATION—WAVES AND CLOUDS.

IN the use of wave and cloud forms for decorative purposes the East stands alone, and the Japanese pre-eminent. They appear in every conceivable variety and under every conceivable circumstance. If I have fallen short of completeness in previous articles, the sin of omission must inevitably be greater here, for it is impossible to do more than give a few of the most striking examples. The formal arrangement of super-imposed semicircles, which is called the "wave pattern," is, I suppose, well known; and curiously enough we find one of those coincidences between the designs of the East and West at the threshold of this branch of our inquiry. The arrangement of semicircular tiles one upon the other is of common occurrence in Tudor architecture, but I presume that no one will consider it necessary to examine the question whether, and if so when, it was introduced to the East from the West.

I must now refer to the illustrations of wave and cloud given with the last article (March 7).* Figs. 7. 8, and 9 are typical examples of the formal design. I speak with some hesitation, but I think I am right in saying that it is never found without inner lines; and it is from these inner lines that much of the charm is derived. Figs. 7 and 8 are taken from the walls of two of the last court-yards of the Temples—those where the tombs are. There is no other ornament but this, which is made of hammered metal in plates, which give about 9 in. as the diameters of the wave circles. The grooving is triangular, like all the diaper carving, the edges being left rough, as I have endeavoured to show in the figures. It is all symbolical of the calm of death, when the soul sets out on its voyage across the quiet sea. I feel sure that my readers will accept my testimony when I say that the symbolism is perfectly successful in its endeavour, and that the effect on the mind is one of absolute repose. In fig. 7 the circles are concentric, and are drawn from the hexagon points of contiguous circles. But in fig. 8 the construction is much more complex and, if I may say so, difficult to discover. In each wave the interior circles are triangular at the base, the centre descending on the diameter by half a "ripple-length." Fig. 9 is a variety of fig. 7; it is painted blue, with incised gold lines.

Fig. 10 is a conventional wave design of quite a different form, which, perhaps from a consideration of the forms in figs. 11 and 14, it would be accurate to term the crested wave. It occurs in a triple form in fig. 11, in conjunction with the lines of repose, and in this the suggestion of foam is irresistible. The carving in this is in deep relief, the wave lines being in gold on a dark blue ground, and the crests in gold on a crimson ground. Fig. 12 is in red lacquer carved in very low relief. Fig. 13 is a plain panel, the wave lines being cut through.

On account of their great interest, I add three more designs in black and white. A is a



A.

panel in low relief, of crimson lacquer; B white surging waves in high relief on a gold ground; and C gives the more conventional scroll which has its origin in the wave. This example is taken from a piece of heavy richly-coloured carving under the gable ends of one of the two Nikko temples.

B.

C.

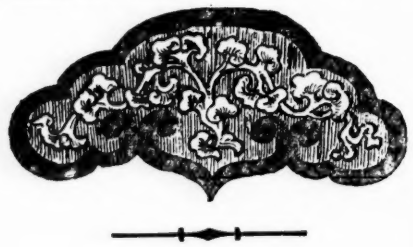
Fig. 14 is a combination of wave and cloud. It is carved in white on the pillars of one of the Shiba temples; the medallion of waves in full relief, the cloud diapers in deep, broad, incised lines. The conjunction of wave and cloud in the same design serves to show what seems to be the fundamental difference between the wave and the cloud designs, which resemble one another in the scalloped curves of the head. The cloud designs appear almost invariably to be double-headed, or infolded. The gradual evolution of the design is, I think, clearly traced in figs. 15, 16, 17, and 18. Fig. 15 is a conventional representation of a cloud executed in three shades of colour mixed with white, very much in the manner o Western "illuminations." The clouds are of different colours on a gold beam. Fig. 16, which is in gold outline on brown lacquer, shows the conventional process carried still further. Fig. 17, which is in high relief, carries out the idea of infolding, and this naturally gave rise to the formal design in fig. 18. The design in this is cut very deeply, and shows the different layers of lacquer. From this comes, of course, the rigid diaper pattern in fig. 14, and also the less formal incised pattern in the border of the same figure. Fig. 19 is one of those designs which stand on the border between cloudland and waveland. Although it is in a single curve, and has some affinity with fig. 10, I am inclined to place it among the clouds—flecked, perhaps, across a summer sky. Fig. 20 is a rigid cloud diaper, often seen; and fig. 21 a fanciful adaptation of cloud forms, executed, like fig. 15, in body colour in three shades on a gold ground.

The illustrations given in the separate plate in the present issue are monochrome reproductions from colour work; they show the design and the balance of light and dark, but the colours are so varied that it was impossible to attempt a colour representation of the original work. Figs. 1 to 4 show the way in which large surfaces are varied with diaper work. The star pattern in fig. 1 will be seen to vary slightly from the one already given in the third article. Fig. 2 is one of a series of twenty frieze panels going all round one of the temples in Shiba. The treatment of the waves, it is needless to observe, differs in each. Fig. 3 is the end of a roof-beam of gold, in which a crimson cloud is deeply incised. An ornament of this nature is almost always cut in the end of roof-beams. It will be noticed again in fig. 4, which is a very elaborate piece of carving, the space between the beam and the joist being filled with a branch of foliage. Figs. 5 and 6 are painted borders, the colours of the peony and butterflies being in three shades, treated like English missal painting. Fig. 7 is an open-work frieze. Fig. 8 is a wave scroll, and fig. 9 a pure line scroll which has developed from the wave scrolls. Fig. 10 shows the capital of a painted column with a diapered beam. The metal fitting is of brass, chased with a highly conventional peony scroll, the groundwork being filled with black lacquer. Figs. 11, 12, and 13 are typical examples of high relief

* The inconvenience of referring back to a former issue for all these illustrations is caused by the author's own arrangement of his articles and illustrations. They were sent to us in duplicate packets with corresponding numbers, and we duly published them together in accordance with the numbering.—ED.

carving. Figs. 14, 15, and 16 are painted friezes showing different methods of treating the flowers. Figs. 17, 18, and 19 are cornice-panels between the roof-beams and the supporting timber. Figs. 20, 21, and 22 are examples of two metal ornaments used at the end of a balustrade, one of which, of black lacquer with chased brass fittings, is given in fig. 23. The head of the support is a lotus leaf. Fig. 24 is an ornament used in the angle of a gable, and shows the use frequently made of the cloud form in architecture.

The tail-piece is a small piece of chased metal; the shape is in the cloud form, and is given as illustrating how these figures seem to permeate all art work. F. T. P.



LETTER FROM PARIS.

THE Société des Architectes du Nord has formed its committee for 1903 of the following members:—M. Louis Cordonnier, President; M. Couturaud, Vice-President; M. Mourcou, secretary; M. Goris, sub-secretary; M. Baert, archivist; M. Salomez, treasurer; and MM. Ronfort and Douillet, delegates of the Departements of the Pas-de-Calais and the Somme respectively.

MM. Pascal, Guadet, and F. Blondel, the three architects appointed by the Minister of Public Instruction to study in the provinces the ways and means for the proposed creation of provincial schools of architecture, have already visited Toulouse, Bordeaux, Rouen, Rennes, and Lille. The Municipality of Bordeaux looked at the question of endowing its town with an Ecole d'Architecture with disfavour, and has refused to contribute to any expenses in this matter. The Municipality of Toulouse has accepted, but requests the Government to afford all facilities as regards expenses. The town of Rouen has not yet decided one way or the other. The Municipality of Lille has accepted with enthusiasm, and consents to place all expenses on the municipal budget. The delegates are now proceeding to visit Lyons, Marseilles, and Nancy.

The subject for the preliminary competition for the Prix de Rome given by M. Daumet was "A Town Gateway," and twenty sketches were selected, the authors of which entered into the second preliminary competition. The following ten students are now competing for the final Prix de Rome:—MM. Coutan, Jaussely, Bans, Boileau, Weilhorski, Lefèvre, Ebrard, Joulie, Fougerousse, and Nicot. The subject for the final competition, which was given by M. Bernier, is "A Public Square," and the ten students have now entered *en loge* to prepare their drawings.

A competition is being opened by the Municipality of Limoges for designs for a circus to be constructed on the Place de la République. The cost is not to exceed 16,000*l*. The author of the accepted designs will carry out the building; the authors of the designs classed second and third will receive premiums of 80*l*. and 40*l*. respectively. The designs will include the arrangements of the gardens, terraces, and the exterior monumental staircases.

The competition for a municipal theatre at Coulommiers has been decided as follows:—MM. Charles Duval and Camille Robida are awarded the premium of 40*l*., and are entrusted with the execution of the work; second and third premiums are awarded to M. Gridaine and M. Saint-Père.

The Société Nationale des Architectes de France has opened its twelfth annual competition. The subject is "A Café Restaurant."

An army of workmen have been occupied for the past few days in commencing the demolition of the Palaces of Electricity, Chemical Industries, &c, and the Château d'Eau, in the Champ de Mars, and within six months the last buildings of the 1900 Exposition will have ceased to exist.

Drawings and models of architecture and art objects are to be sent in to the Grand Palais des Champs Elysées, between March 19 and March 21, for the Salon of the Société National des Beaux-Arts (New Salon), and those for the Salon of the Société des Artistes Français (Old Salon) are to be sent in on April 4 and 5.

The Chamber of Deputies has passed a vote authorising the delivering of a certain number of official decorations on the occasion of the centenary of the foundation of the Academie de France at Rome, the completion of the excavations at Delphi, and the twenty-fifth anniversary of the creation of the Ecole Française at Rome. These decorations, limited to the number of four Croix de Grand-Officier, ten Croix de Commandeur, thirty Croix d'Officier, and forty Croix de Chevalier, will be exclusively bestowed on artists and *savants* who have been members of one of the French schools of Rome or Athens.

There has been much discussion in Paris, the last few days, about the "Tiara of Saïtapharnes," acquired by the Louvre a few years ago, the authenticity of which was doubted from the first. Former differences of opinion have been revived with additional acrimony; eminent archæologists declare the tiara to be a genuine antique, while others equally eminent demonstrate its spurious character, and even question the existence of Saïtapharnes himself. The immediate result of this conflict of opinions has been that the directors of the Louvre have withdrawn the tiara from exhibition pending an examination of its claims by a learned professor of the College of France, M. Clermont Ganneau, who has been commissioned by the Minister of Fine Arts to undertake the investigation. A goldsmith at Odessa declares that he made the tiara, and offers to come to Paris and prove it if his travelling expenses are paid.

The discussion has aroused a spirit of scepticism in regard to some of the contents of other Paris museums, and the paintings in the recently-opened Dutuit collection especially have been the subject of investigation and distrust. According to M. Henri Rochefort, whose experience in artistic matters is undeniable, the picture entitled "Portrait of Rembrandt by Himself" is not even the work of one of the Flemish master's pupils, but of a clever "pasticheur," one Dietrich. As the work is part of a collection which was a gift to the City of Paris, no one has been cheated; but the questionable tiara at the Louvre was purchased at a good sum, and it is feared that the doubts thrown on it will be a check upon future contributions from the "Amis du Louvre." The "Société des Amis du Luxembourg," which is concerned only with modern works, may be supposed to be less exercised by the abilities of clever forgers; but even the Luxembourg is not safe in this respect. There are an immense number of spurious modern pictures among the Parisian dealers, and the works of a certain Trouillebert have been freely sold as pictures by Corot.

M. Paul Meurice, the faithful friend and admirer of Victor Hugo, has nearly completed the arrangement of the Hugo Museum in the Place des Vosges. On the first floor are the poet's books, rare editions of his own works, and drawings or pictures in illustration of them; among them M. Carrières "Fantine," M. Besnard's "Representation of Hernani," M. Rochegrosse's "Burgraves," M. Henner's "Sarah la Baigneuse," M. Roll's "Funeral of Hugo," and M. Roybet's "Don César de Bazan." The second story is reserved entirely for Victor Hugo's own "Fantaisies," as they may be called. The curious collection of original drawings occupies two large rooms; and here also are the pieces of furniture designed or executed by him, mostly exhibiting a kind of suggestion or reminiscence of Japanese work.

M. Rodin has at present in hand four large sculptured groups intended to decorate a château near Evian-les-Bains. These groups symbolise the Seasons, represented each by a female figure; "Spring" is reclining under the branches of a tree; "Summer" is grouped with a lion; "Autumn" with fruits and an infant; "Winter" is a well wrapped-up figure sound asleep.

The "Aero-Club" has raised subscriptions for a monument to commemorate the services rendered by aëronauts during the siege of Paris. The monument, of which M. Bartholdi will be the sculptor, is to be erected on the Place St. Pierre, at Montmartre. It will be 8 to 10 mètres in height, consisting of a square pedestal adorned with escutcheons and inscriptions, supporting a group of figures, above which is a balloon, which, it is understood, is to be luminous at night. The pedestal is to be reached by steps divided by pedestals carrying sculptured subjects relating to the use of balloons during the siege.

A monument to Arsène Houssaye was inaugurated last week at Père Lachaise, close to the Monument aux Morts. It is very simple; a white marble bust on a granite stele adorned with palms and roses.

As a kind of pendant to the "Concours des Façades," it is now proposed by the Municipal Council of Paris to arrange another competition which will be of considerable practical value. The intention is to offer prizes of 1,000 francs to the owners and architects of houses built during the year, which are let at not more than 600 francs (24*l*.), and which are proved to be entirely satisfactory in respect of comfort and hygienic condition. This is an excellent idea, and may have important results.

The Fête of the Centenary of the Villa Medicis will not be held at the Ecole des Beaux-Arts as was first intended, owing to the heavy expenses which the necessary installation for such a ceremony would involve. The fête and banquet will take place at the Palais d'Orsay Hotel, Paris, in the month of June, which date has been fixed in order to allow the old Prix de Rome students to be present at the ceremonies which take place at Rome in April.

Among the new batch of students admitted to compete for the Prix de Rome in painting is a young lady, Mlle. Rondenay, the first of her sex admitted to compete for entrance to the Villa Medici. She has already obtained, at the Atelier Humbert, two second medals and the Huguier prize. The example has been followed by another lady pupil of the Ecole des Beaux-Arts, Mlle Rozat, who will take part in the sculpture competition. Mlle. Rozat is one of the most brilliant and promising pupils of the Ecole, where she has already carried off several prizes.

The death is announced, at the age of sixty-eight, of M. Jean Dabernat, a former architect to the Department of the Seine and member of the "Conseil d'Architecture" of the Seine. M. Dabernat was a pupil of Hippolyte Lebas. He carried out a number of buildings marked with the impress of real talent. He had obtained various honours in public competitions, notably an Honourable Mention in the competitition for the Church of Sacré Cœur at Montmartre.

The death is also announced, at the age of fifty-six, of M. Lemarié des Landelles, the painter, a pupil of Gerôme and of the landscape-painters Rapin and Pelouse. He was an exhibitor at the Old Salon, chiefly of landscapes in Brittany.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual fortnightly meeting of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Mr. John Slater, B.A. (Vice-President), in the chair.

Mr. Alexander Graham (Hon. Secretary) said he had to announce with regret the decease of Mr. John Bond Pearce, of Nottingham. He was elected a Fellow in 1879. He had also to announce with regret the decease of Mr. Samuel Stenton Markham, of Guildford. Mr. Markham was elected a Fellow in 1886, and placed on the list of retired Fellows in 1897.

Fire Prevention and Resistance.

Mr. Horace Porter, M.A.Cantab., then read a paper on "Fire Prevention and Fire Resistance," of which the following is an abstract:—

Mr. Porter said that his object was to bring forward for discussion the question not only of the number and value of methods already devised for fire protection, but also of the extent to which these are available for practical use. The fires due to mechanical or constructional causes are the only ones we can hope definitely to prevent. These are worth careful consideration, both on account of their importance, and also of the large extent to which they can be guarded against. The Glasgow fire returns for the years 1876-86, *i.e.*, before the introduction of the Buildings Regulation Act, give 27·8 per cent. of the fires as due to defective hearths and flues, as against 9·65 per cent. in London during the same period. Defective hearths and flues account for a large majority of fires in the country, especially in old houses. All possible measures of safety in the construction, repair, or alteration of chimneys and flues in

country houses should be insisted on. In old London houses, too, the flues which were sound enough for the old-fashioned open kitchen range are found defective, in respect of their whiths and chimney-backs, for the modern close kitchener, which creates great and concentrated heat. Timber mantelpieces constitute another source of risk from the way in which they are frequently fitted, with the metal of the grate touching the wood. In fixing the mantelpiece there is often left a small pocket in which soot accumulates, and may become ignited. A fire had occurred from this cause in a very expensive London mansion. Wall-plugs for joinery must also be regarded as sources of danger when near flues, especially in old houses where the pargetting of the flues has worn away and the joints of the brickwork have become open. Another risk is due to the practice of boarding up unused fireplaces, or making them the receptacles of scraps of paper and other inflammable materials, which may easily be set on fire by a spark falling down the chimney from some other flue. The Glasgow Building Act compels all such fireplaces to be stopped up with incombustible material, and the chimney top as well.

Fire prevention is only practicable in about 25 per cent. of our present outbreaks. Fire resistance therefore claims our most immediate attention. The degree of perfection to which this can be carried depends not only on the building itself, but also on its contents and immediate surroundings. This has to be kept in mind, as it is useless to expect owners to spend large sums on "fireproof construction" which they are perfectly aware will benefit their neighbours rather than themselves. The two chief elements in fire-resisting construction are :—(*a*) the materials used ; (*b*) the general design of the building and details of construction.

As regards building materials, good brickwork is no doubt best for fire resistance. The chemical composition of the clay is the great element in determining both the fire-resisting and weight-carrying properties of a brick, which depend chiefly on the proportions of silica and alumina in the clay, and secondly, on the oxide of iron, lime, magnesia, potash, &c. Terra-cotta used for structural purposes may be porous or hard-burnt. The porous is made by the addition of some combustible material, such as sawdust or finely-chopped straw, to the pure clay, which is then burnt under great heat. By this means the straw or sawdust is consumed, leaving the clay in a porous state. Hard-burned terra-cotta is made from pure clay without the addition of any combustible substance. The porous form is non-conductive of heat, but does not carry weight so well as the solid ; and if the straw or sawdust has not been thoroughly burnt out of it, there is danger of disintegration under the combined effects of fire and water. The hard-burned terra-cotta has to depend greatly on the hollow spaces with which the blocks are moulded, and is liable to crack on being suddenly cooled. For the protection of girders or columns, where it has little or no weight to carry, the porous form seems the best.

Discussing the fire-resisting qualities of mortar, plaster, and cement, Mr. Porter referred to a series of tests with cement mortars carried out in Chicago in 1896. From these it was deduced that concrete floors might, after a fire test, hang together under heavy loads, but they are nevertheless weakened ; to what extent depends upon the duration of the heat. Cement mortar can hardly be relied upon to resist high temperatures satisfactorily. Common lime and sand mortar in small quantities has probably greater fire-resisting properties than any other plastic material, and would be a better protection than cement mortar if it were strong enough to be used to a thickness of, say, 4 in. or more.

As regards concrete, tests have been made by which the material has been subjected to as much as 1,976 deg. F. for several hours, and allowed to cool slowly, and also suddenly by application of water. The concrete composed of sand, gravel, or stone mixture crumbled, or gave signs of great weakness, while that composed of cinders showed good coherence, and did not suffer by wetting while hot. The highest degree of coherence was found in a mixture of 1 part cement to 7 of coarse cinders. The conclusion is that where concrete has been made with care and knowledge it will bear very high temperature for a long time, even with the application of cold water.

Wrought-iron, cast-iron, and steel, although non-inflammable, are not good fire-resisting materials, and must be cased in some fireproof covering. Unprotected iron may not itself suffer by fire, but its expansion under great heat may cause serious damage to the building. Steel will expand 1 in. in 125 ft. for every 100 deg. F.

Combustible materials for the fitting-up of buildings should be used as sparingly as possible. Shelves might in many cases be made of wire-netting supported on metal uprights ; counters might be constructed on the principle of fireproof doors and shutters. The use of wood, however, cannot be eliminated altogether. Careful tests seem to prove that wood can be so treated as to be made efficiently fire-resisting ; that the treatment does not injure it for structural purposes, and that its effect is permanent. But the process adds about 30 per cent. to the cost of joinery in soft woods, hence it is too expensive at present for general use.

Design, construction, and fittings are the most important questions in the problem of fire-resistance. Errors in design and construction will cause what might have been a small fire to spread over a large area, and work practically unlimited destruction. The Horne Building fire in Pittsburg, and, though less destructive, the recent fire at the Haymarket Stores, are cases in point. In both buildings the fire spread through a lift shaft, which served as a flue on a large scale. The problem immediately before us is the treatment of all such vertical shafts or openings in the interior of buildings.

The author went on to consider the treatment necessary for the different purposes for which well-holes are required—dealing first with well-holes and light shafts ; secondly, with well-holes for stairs and lift enclosures. The use of wire-glass in iron frames for skylights in well-holes is desirable, as it helps to prevent the fire from bursting through from below or burning embers falling in from above. Wire-glass withstands not only great heat, but also the sudden cooling when water is poured upon it. It is not only admirably suited for skylights, but also for warehouse windows overlooking narrow well-holes or streets.

Judged from the standpoint of fire-resisting design, the usual position of staircases and lift shafts in mercantile offices and hotels is wholly wrong. Such well-holes should be enclosed by fire-resisting walls, with access to large floors or corridors by doorways only, which could be fitted with fire-resisting doors. The walls enclosing well-holes should be carried through and above the roof in the same manner as party walls, and the skylights over should be of thick plate-glass, or preferably wire-glass. Extra fireproof doors for stairs and elevator openings are recommended. To check the rush of flame up a shaft a system of automatic sprinklers might be fitted round the sides of the opening near the roof, or perforated pipes in connexion with an outside standpipe would serve the purpose. A staircase made of oak or teak, with 2-in. treads and risers and soffits, and the spandrels filled in solid with some hard wood, the author thought, would be found the most reliable.

Subdivision of large areas, where possible, is an important consideration. A fire in a large undivided area increases both in intensity and volume with much more rapidity than in a smaller one. Where areas are divided into rooms or offices, the partitions should be fireproof.

Fire-resisting floors the author classed as (1) concrete, (2) terra-cotta or brick. Some half-dozen exceedingly severe tests have been made of concrete floors, and not one of the floors failed. Experimental tests show that hollow tile arches, of good design and not too long span, have a strength sufficient to be safe under any load likely to be brought upon them in any ordinary building ; also that their resistance to fire is entirely satisfactory, except that the dense tile is likely to go to pieces if struck by a stream of water when heated.

A satisfactory fire-resisting covering for columns and girders should be a non-conductor of heat, should be able to withstand the action of fire and water, should not break away from the column under the action of fire and water, and should contain no joints through which fire could find its way. The covering may be of plaster, concrete, brick, or terra-cotta. Metal lathing should only be used where plaster is adopted for the covering material, and the column should be first wrapped with asbestos lining bound with wire.

The author next described the best forms of fire-resisting partitions, dealing with (1) solid plaster partition ; (2) hollow plaster partition ; (3) terra-cotta, or porous brick, partition. It is most important that terra-cotta partitions should start directly upon the masonry of the floor, and the terra-cotta blocks should be of sufficient width to secure stability.

Special attention was called to the importance of protecting all openings made through floors for the passage of pipes for steam, gas, or any heating apparatus ; and private apparatus, as aids for fire-resistance—*e.g.*, automatic alarms, automatic sprinklers, stand-pipes, and hose—were briefly referred to.

In conclusion, Mr. Porter said he had tried to bring forward one by one the main features in the problem under discussion. The more carefully we go into it, the more apparent it becomes that the real problem is not to be solved merely by devising further improvements in the details of materials, construction, or design. We are already admirably equipped in these respects, and modern inventions are continually adding to our resources. Fire-resisting construction involves a considerable increase of expenditure, coupled often with a sacrifice of space and artistic effect. The practical problem for architects is how best to minimise these drawbacks. A useful basis for a discussion might be afforded by giving as a subject for a students' competition the designing of a hotel, retail store, or mercantile house, on fire-resisting principles, having special regard to internal effect in the first two cases, and in the third to economy of space.

Mr. H. D. Searles-Wood then read the following Report of the Science Committee on the fire offices' regulations for standard fire-resisting buildings :—

"In 1898, after the Cripplegate fire, a conference of architects and insurance surveyors held two meetings with a view to ascertain what reduction of premiums the insurance companies would allow if buildings were constructed under the following conditions :—

1. If buildings are flat-roofed, with hard fire-resisting material.

2. If floors of iron and concrete, constructional ironwork covered with fire-resisting material, say, as required by the London County Council regulations, floors connected only by staircases, which, with the landings, to be enclosed by fire-resisting material, such as cement on metal core, now much used ; lights in these partitions to be sheet plate. Teak or oak doors, and treads and risers.

3. Similar floors, but pierced for lift, enclosing walls of brick rising through roof, and openings on each floor protected by light iron shutters.

4. Wood floors and joists pugged 4 in. between joists with some fire-resisting material pierced for stairs, constructed as in No. 2.

5. Pugged floors as above, with lift in addition, lift enclosed with fire-resisting partitions as stairs in No. 2, and with iron doors.

6. If the lighting areas or well-holes common to buildings in different occupations be carried down to the basement floors and not roofed over by skylights on the ground floor.

7. If windows in front and back wall fitted with iron sashes and frames, but left without shutters.

8. If opposing windows, within say 20 ft., are fitted with iron shutters or some fire-resisting material for blinds.

Any other heads or points which the offices may desire to note or which are set out in existing tariffs.

At a second meeting a tariff was submitted in which a normal building with a minimum rate was given, and the rate increased to meet ten or twelve different modes of construction. This tariff appeared to be in form and principal exactly what the Committee had been endeavouring to obtain from the offices, and they were strongly of opinion that if the insurance offices regulate their premiums on any principle whatever and agree upon a tariff among themselves, that it is only fair to the insurers and their advisers that such tariff with clear definitions should be available for public use, but this was not agreed to. Since this conference some rules for standard fire-resisting buildings, dated February, 1902, have been issued by the Fire Office Committee, and have appeared in our *Journal*.* and the Science Committee have

* *Journal*, Royal Institute of British Architects, January 11, 1902, p. 116.

given them careful consideration. The rules are numbered 1 and 2. No. 1 applies only to cotton mills, flax mills, woollen mills, and worsted mills. No. 2 gives rules for standard fire-resisting buildings, not including those scheduled above. From a careful consideration of these rules it would appear that they have been drawn up without reference to the London Building Act, 1894, and in several points the rules differ from the provisions of the Building Act. It would greatly facilitate business if these rules could be made to accord with the Building Act, and if the Fire Offices Committee would draw up a tariff which would be available by the public where the normal building should be the type allowed under the Building Act, with ten or twelve varieties of construction or arrangement, whereby the normal rate would be reduced.

We recommend the Council to approach the Fire Offices Committee, to ascertain whether they would meet a Committee of the Institute to discuss these rules and tariff, with a view to making them workable. It is the general experience that the rules as at present drawn do not encourage fire-resisting construction."

Mr. Thomas Blashill, in proposing a hearty vote of thanks to Mr. Porter, said there was no doubt that many of the points in the paper were a repetition of principles which had been dinned into the ears of everyone for a very long time, but they could not be dinned into the ears of architects and the people concerned with buildings too often, because one knew how important the advice was. He would take the opportunity of saying that the Science Committee had considered their Report with very great care, and although they could not discuss it at any length that night he hoped the Report would commend itself to the Council, and that the Council would be encouraged by the meeting to act upon it. Mr. Porter spoke of tests, but tests were valueless, or next to valueless. He had never found any particular value in tests as they were made, and with which they were familiar. A great number of these tests were made by the manufacturer of the article which was to be tested, and he thought, if they considered the matter, they would find they had never met with a single case in which the material which had to be burned was not drenched with paraffin. That was fatal to the test, and he had not the slightest doubt that some of the people who made the tests knew it. If they attempted to light a fire in a kitchen grate by soaking a little wood in paraffin they would find that it burned for a few minutes very brightly, but might then go out. That was a thing which could not be too well known. There was a Fire Prevention Committee, which had carried out very good and efficient testing so far as he had had the opportunity of seeing them, and he advised that Committee to avoid this fallacious kind of testing, and to test the thing as nearly as possible in the way it was likely to exist. They ought in such tests to try to get as nearly as possible to the conditions in which the material would exist in a fire, and, of course, in a fire the materials would not be soaked in paraffin or tar. He remembered once a very experienced and eminent fire engineer pointed out to him that these things make a great stink and a great smoke, but that they were of no utility whatever as testing the efficiency of the thing which was to be tested. Then he would like to ask Mr. Porter if he could give any more practical information upon such a question as that of concrete floors. The tests which had been alluded to were all very well, and were more valuable than those to which he (the speaker) had referred, and which applied more to wood; but they wanted to know about fireproof floors which had been in use for fifty years in London. What they wanted to know was what was the behaviour of such floors in an actual fire. It was something like giving an elaborate analysis of the degree of purity of the gold in a sovereign. They did not want to know that. What they did want to know was whether it was good enough to buy 20s. worth of any article they might wish to buy, and that was all they cared about. If Mr. Porter could now, or at some future time, get some information as to what happened in a real big fire to fireproof floors it would be extremely valuable, for he believed it was not now available to the public. He could quite corroborate the case mentioned by Mr. Porter as to several stories in a building being burnt out, while intervening stories were uninjured. They could not be too careful in not having hollow partitions and trunks or shafts of any kind. They caused what was known as a fire haze, which was an exceedingly hot vapour produced by the fire below, and which did not burst into flame until it came in contact with the air. He hoped they were coming to the time when they would cease entirely the construction of wooden floors and floors not fire-resisting. In his own experience he had been able to construct floors quite as economically of coke breeze and iron as could be constructed of any good wooden material, and it seemed at this time somewhat behind the age, where houses were placed together, to build of materials which were combustible. He remembered so far back as 1861 to 1866 seeing fire-resisting floors built as a matter of course in Paris, whereas they had hardly begun to use them in England. He did not know whether at that time it was by law or not, but he hoped the legal pressure upon construction would be stronger in order to make buildings more nearly fire resisting. Mr. Porter referred to "cinders," and he presumed he meant that to cover all things which had passed through the fire. Coke breeze, as everybody knew, having suffered much greater heat than it was likely to be subjected to in an ordinary fire, was one of the safest of materials, especially when put together with cement in the proportions given. Burnt ballast was another, and flint concrete was the most easily disintegrated.

Mr. Mead (Sun Fire Office) said he was not commissioned to speak for the Fire Insurance Offices, but he might venture to say that they were always interested in suggestions coming from architects, and with regard to the remarks which fell from Mr. Searles-Wood, he had no doubt that the suggestions would receive proper attention from the fire offices. With regard to the cause of fire, he did not know that he could altogether agree with what Mr. Porter had said as to the number of incendiary fires. He believed that the statistics which would attempt to fix upon any proportion were fallacious. The incendiary fires were very often so complete as to leave behind them no trace whatever as to the origin of them. Sometimes the perpetrator of the incendiarism showed that he was altogether a novice at it—he started certain fires in different parts of the building by soaking material in paraffin and setting light to it, the result being, as Mr. Blashill said, that there was a good deal of smoke and then the fire went out. The police, of course, came in and detected the various heaps and were able to pronounce very fairly upon the character of the fire. But there were a good many who knew better how to do it, and if anybody had any doubt upon that if they came to him or to some other discreet official of a fire office they could learn how to do it. But, speaking with the experience of a good many years of an important fire office, he had come to the conclusion that it was greatly to the credit of the country that the proportion of incendiary fires was small. They could judge of that not only by the fires themselves, but by the way in which the claims were compiled after the fire. In those claims they were able to scrutinise, the result of their scrutiny was the conclusion that they were fairly made out as a rule, and betrayed no evidence of fraud, which would be found if the origin of the fires were of an incendiary character. He seconded the vote of thanks to Mr. Porter.

Mr. Blashill said he would like to add one word in view of the remarks of the last speaker. Some forty years ago he was called to a fire in an eight-roomed house. The man had had two fires before, and he was a pianoforte manufacturer, and had a good deal of material about. The man had bought a bushel of fire-wafers, and had made twelve fires, and when he (the speaker) and others got to the house they found that every one of the fires had gone out.

Mr. Lewis Solomon, in supporting the vote of thanks, said he had frequently had occasion, as most architects had, of waiting on the Fire Offices with reference to claims, and while it was true that the Fire Offices did not print any matter for the general use of architects, yet they had printed forms which they lent to architects, and their surveyors were exceedingly kind in giving every information, not only when an architect applied, but they would take the trouble to examine the plans, and suggest certain improvements which could be made to reduce the premium. Therefore they would see that it was not through any want of good feeling that the Insurance Offices did not always fall into line with them. He thought, however, that the suggestion might be made to them to act with a little more business tact. After the Cripplegate fire several owners of property wished to restore their buildings in a fireproof manner, with stone and teak stairs, concrete floors, &c. Naturally, they wished to have the premiums reduced to some extent if they built their premises in a proper manner, and they were told that there would be no reduction whatever. Now he daresay that a good fire was a good advertisement for the insurance companies, and if they saved, say, 20 per cent. of the risk by the building, if they allowed only a quarter of that to the person who built the premises, it would pay them in the long run—at least, in every other business it was found to be a good thing to give the purchaser a share in the profit. Mr. Porter made a remark about teak staircases, and he thought it would be a very good thing, but would the County Council allow it to be used in factories instead of what they suggested? He doubted if they would. He had tried at times, and found they would not. His own impression was that a teak staircase was much better than a stone one for fire resistance and safety. Mr. Porter had not mentioned anything about concrete stairs, but nine-tenths of the fireproof stairs built in London were of concrete, and his impression was that they were far better than stone although not nearly so good as teak. Mr. Porter had shown them a plan of a staircase, but he did not think that plan would apply in London, because it did not comply with the requirements either of the County Council or of the fire insurance offices, who asked, and reasonably asked, for a space of 6 ft. between the stairs and doors so that the fire could not spread. The plan they had seen did not show anything like as much. Then the County Council required newel walls and staircases, and the plan submitted did not show that. Mr. Blashill had remarked about the fallacy of making tests, and he remembered some years ago a man brought some material to him as being fireproof, and to show that it was so he built a fire on the top of it, and the fire did not burn through it. He (Mr. Solomon) took up some of the material and threw it on the fire and he found that it burned like the best coal.

Mr. Henry Lovegrove remarked that he had had a good deal to do with fires, and had noticed that in the smaller factories a good many fires occurred about quarter day. He did not know whether they were incendiary fires. There was no doubt, however, that in Shoreditch and Whitechapel a good many fires resulted from incessant smoking of alien workmen, who threw the ends of the cigarettes about and often on to heaps of shavings. He would like to ask something about sprinklers. He had seen a great many sprinklers put up, and they were a great expense. But when this expense was incurred it seemed to him that when a fire occurred on the top floor, as the result of the operation of the sprinklers, the lower part of the building was deluged with water, and an enormous quantity of stock was destroyed. He had spoken on the matter to a man whose name was well known and who was a great believer in sprinklers. This gentleman was the owner of very large mills, and he was rejoiced when some one should come and ask questions, and he laid it down, after some discussion, that the theory of 10 ft. apart was wrong. This gentleman advocated that the sprinklers should be 8 ft. apart, and he seemed to be able to prove it by facts. Mr. Porter had said 10 ft. apart. This gentleman seemed to think that the alarm given at the time the sprinkler started would be sufficient warning for some person to attend who would in due course turn off the water. He would like to know Mr. Porter's opinion as to the damage done by the water to the goods below. Some of the buildings with which he was most intimately connected were large furniture stores, and it seemed to him that immense damage might be done by the water coming down on the floors beneath. Incidentally he would like to ask a question as to the use of rushes which had been worrying him for some years. He had seen many old ceilings taken down where rushes had been used, and he would very much like to know the period when rushes were used for the plaster. Concrete staircases had been referred to, and he really thought

that a good concrete staircase was the very best kind, because he knew that stone staircases came to grief most horribly. In theatres and in an infirmary fire stone staircases were destroyed. Coke breeze, he quite agreed, was good material, and he thought it stood much better than even a good ballast concrete floor. He considered that the iron girders and stanchions should be protected, but there was another weak point, and that was the fittings, partitions, &c. The other day he went over a building in which everything had been done to make it fire resisting so far as the girders and columns and so on were concerned, but almost every floor was filled with partitions and fittings of ordinary deal, which would be most inflammable. He would also like to know what Mr. Porter and others thought of armour-plated doors. He had one case where they had actually been fixed, but he had them taken out. He did not give any opinion as to whether they were good or bad, but simply said they were not allowed, and they were taken away.

Mr. T. Lewis Banks said there was no doubt that concrete was a material they more and more used, not only for floors, but in all kinds of construction, and he would like to refer to one point which had not been mentioned, viz., that of the necessity of armouring concrete. He remembered when the Cardiff Merchants' Exchange was burnt down he went to see the effects of the fire on the ordinary concrete floor, and he found that there were holes in several places which allowed the flames to go from one story to another. If the concrete had been armoured, these broken pieces would not have fallen down. The same principle applied also to concrete stairs. They had already put iron rods through the stairs, but he would like to see the whole of the surface armoured. In the Midland Hotel now being built at Manchester, which was, perhaps, the most scientifically fireproof building of the hotel type being built in the whole of the country, they found that all the principal staircases were concrete, and they were all armoured in the way he spoke of and afterwards covered with marble. There was one other thing, which was the material used for plaster, and he believed the best fire-resisting plaster was made from slag from the hematite furnaces, which set much harder than Portland cement, or any other material he knew, but it set very slowly.

Mr. Max Clarke said that any one who had read a paper at any time knew the trouble it entailed, and he trusted that Mr. Porter would not mind if he made some criticisms on the paper. Mr. Porter seemed to fall foul of the words "fire prevention," and he commenced by giving an analysis of the various means of accident by which fires occurred. He took it that all fires were created by accident, except those few which were caused by incendiaries. But when they used the words "fire prevention," what they intended to convey to everybody was that a fire should not assume importance, and that should be the usually accepted meaning of the words. If so, it appeared to him that Mr. Porter might have given them the benefit of experience of how these fires should not obtain this undesirable importance. For instance, at the start of the paper they had a very clear description of defective hearths and flues, and they were, of course, conversant with these matters. What they wanted was a cure for them or some method of obviating the defects. Now in the North and in Ireland, nine-tenths of the chimney-flues were built with terra-cotta or fire-brick linings which were almost unused in London, but if that was done a great number of fires which occurred through defective flues might be avoided. He threw that out as a suggestion. Then the Building Act, which unfortunately Mr. Porter had not mentioned, did play an important part in all these matters, and that Act permitted them to drive plugs and iron holdfasts into chimneys, and entirely ignored the fact that iron holdfasts might get red hot and set fire to the skirtings, &c. With regard to the remarks of Mr. Porter as to gas fittings, he would like to ask one question, because, as they knew gas created only explosions, he took it meant creating fires, and whether it was a matter which was purely a fire insurance one he did not quite understand. But supposing they had a fire caused by an explosion, would the insurance company look upon that as an accident or an explosion only, and as not coming within their risk? Then Mr. Porter said the phrase "fire resistance" was, of course, a relative term, and the degree of perfection to which it could be carried depended not only on the building itself, but also on its contents and its immediate surroundings, and he went on to say, "This has to be kept in mind, and it is useless to expect owners to spend large sums of money on fireproof construction which they are perfectly aware will benefit their neighbours rather than themselves." He thought that was a most unfortunate remark to make in that room, for in the first instance he did not consider that it was a fact, and in the second place it would be apt to create an unfortunate feeling amongst people who were going to build. If a man built for the good of his neighbour, when his neighbour also built he built for the good of the adjoining man, and if they only looked at it in that light it would be seen that it was for the benefit of the building owner. But, in addition, he took it that the man who built a fire-resisting structure did benefit himself. Of course, they must start with the assumption that there was no such thing as a fireproof building. That was absolutely impossible, because they had only got to get the material inside the building for it to be destroyed. He had a report of the Horn fire, in which it simply said that it did not make any difference how much they covered the steel or other materials with what were known as non-conducting mediums, because in time all these non-conducting mediums were of precisely the same temperature as the fire itself, and they communicated this to the steel structure. So they must not call a building fireproof, except in a degree. That degree depended entirely upon the material which was inside, and if they went to the heart of the City of London, which, unfortunately, had got the reputation of being rather a dangerous zone, they found in that portion of the City the materials were of the most inflammable nature, and, rightly or wrongly, he thought the people who stored those materials stored them in the most inflammable receptacles. It seemed to him that they tried, as far as possible, to destroy their buildings when the fire did occur. Then with regard to brickwork, every one knew that the best fire-resisting brick was the firebrick, but the firebrick was not the one which stands the greatest amount of weight, and so they had to try and get the happy medium, and use the material which was weight-carrying as well as capable of resisting fire. If they had seen the Barbican fire they would have seen enormous cracks down the thicknesses of brick walls caused by the excessive heat. It was only a question of degree. The hard-burned terra-cotta, every one knew, was absolutely useless when water was put on. Then with regard to concrete, Mr. Porter said that tests had been made by which the material has been subjected to as much as 1,976 deg. Fahr. for several hours and allowed to cool slowly, and also suddenly by the application of water, and it was found that the concrete composed of sand, gravel, or stone mixture crumbled or gave signs of great weakness, while that composed of cinders showed good coherence, and did not suffer by wetting while hot. He would like to know where those tests were made, for he had had the fortune or misfortune to have to write the reports of some tests on concrete floors, and he would like to compare those tests. With regard to ballast he must differ absolutely from Mr. Blashill, because he did *not* consider ballast was a good material. In the fire which occurred at the Theatre Royal, Glasgow, a good many years ago the corridors there were all made of ballast concrete, and they became very hot, and when the water was put on the whole of the floors, or the majority of them, fell down. When they made floors of ballast at the British Fire Prevention station, and put water on them, they fell down—usually in layers as regarded their thickness. But the coke breeze concrete, although absolutely incandescent throughout its thickness, did not fall down, and he thought it was pretty clear from these reports that the coke breeze floors, of not too large an area and of sufficient thickness to protect the ironwork, was a good fire-resisting material. He understood that cast-iron was good so long as no water was applied, but if water was applied when the iron was hot, it was not so. He understood that the best treated wood added 90 per cent. to the every-day cost. He applied for a quotation some time ago, and it was 6s. per foot cube, and that, of course, would put it on a par with the best hard wood. He had in his hand a Report, which had not yet been made public, on tests made of oak and deal flooring. It says:—"The centre-piece measured 13 in. by 13 in. at the bottom, and 13½ in. by 13½ in. at the top over the charred surface, and was charred to the average depth of 1¼ in. The transverse beams measured 9 in. wide over the charred surface, and were charred to the depth of 2 in., and still more at the ends. The joists were charred to the depth of 2 in., and still more at the ends and where they rested on the walls." These were all deal. At the second fire at the Theatre Royal, Glasgow, the timber over the proscenium opening (of deal) was burned absolutely through. It rested on a wall 3 ft. in at each end, and the whole thickness of the timber was burned right through. That of course occurred owing to the brickwork around having got red hot and the timber burned away by degrees. In the case here there were some bolts through the timber and these bolts became red-hot, and they burned the timber away, altogether for the space of about 3 in. to 5 in. all around, so that with regard to heavy timber construction which was insisted on in Hamburg, the danger was where it was put together by massive bolts: and that was a point to be considered.

A member: Was that proscenium a hard wood beam or an oak beam?

Mr. Max Clarke, continuing, said that timber construction was extremely dangerous with regard to smoke. The enormous quantity of perfectly black smoke which was emitted by oak was a most terrible source of danger. In a fire which occurred in Brownlow-street some time ago the place was not burned down, but the oak timbers in the basement were burned, and, unfortunately, suffocated the three inhabitants. In the tests at the Fire Prevention Station there was as much black smoke as would have suffocated the people all round, and this, of course, was very much to be avoided. He took it that all discussions on fire prevention matters resolved themselves into two heads. One was where the building or its contents was destroyed, like the Haymarket Stores fire just recently; and the other was where the unfortunate inhabitants were destroyed. They could insure a building and its contents against loss, but not the lives of the people, and, therefore, any discussion on fire prevention was incomplete without considering the lives of the people, and if they did that at all they must consider not only their being burned, but their being killed in any other way. Those not familiar with the matter might imagine that it was in the Horn building that the original fire occurred, but that was not so. It occurred in Jenkins stores which adjoined, and the fire was communicated to the Horn building through the top of Jenkins building. The fire seemed to have gone up the elevator shaft and set fire to the Horn building at the top. That would be obviated, he took it, in most of the buildings of the warehouse class if the lift shaft were surrounded by brick, and if these openings were fitted with fire-resisting doors. He was not himself a believer in Dowson's or anyone else's armoured doors, nor a believer in the iron door at all which was not adequately fastened. In the Building Act it was said that there must be an iron door, but it did not say anything about the fasteners, and he took it that they would be at liberty to put up an iron door without any fastenings, or, at any rate, with one fastening, and a door like that would be useless. He hardly agreed with Mr. Lewis Solomon as to teak staircases. Of course, if they had a solid teak step, or a solid oak step, with a fairly good thickness in the waist it would be an absolutely fire-proof material, but on the other hand if they built a wall to a staircase which complied with the County Council factory requirements at the present time, he thought they had got there what was very nearly a fireproof staircase, because the doors protected the staircase pretty well, and there should be nothing in the staircase of a combustible nature. He would like just to refer to an old friend of his, and that was slag wool, which he believed to be the best non-conducting and fire-resisting material of its kind that there is. He patented a fireproof screen for theatres fifteen or sixteen years ago made of this material, and he would advocate slag wool as against asbestos for covering columns, because in the first place it was a better non-conductor of heat, and in the second place it was much more economical.

The Chairman said they had had a most

interesting discussion on an important subject. It seemed to him that fire prevention and fire resistance were really two things. They could not prevent a fire occurring, because the cause of fires was beyond the control of the people who constructed the buildings. What the architect and the builder had to do was to make the building as far as they could resist the fire which was sure to break out in many kinds of buildings sooner or later. He was much struck by the statistics which Mr. Porter gave of the Glasgow fire returns, showing what an immense effect really good construction in the way of hearths and flues had. Mr. Porter said that 28 per cent. of the fires in Glasgow were due to this cause, whereas they were only a little over 9 per cent. in London. He did not think Mr. Porter laid quite enough stress on the extreme importance of making all roofs fireproof. If the roof of a building was made of concrete the spread of the fire would be resisted to a considerable extent. It was quite true with regard to cast-iron columns that, unless cast-iron was protected, as soon as the water touched it when it was hot, it was absolutely useless. With regard to the staircases which had been handed in by Mr. Porter, it seemed to him that Mr. Solomon, in his criticism, rather mistook the purpose for which it was intended. As he understood it a staircase of that sort was intended to make the up shaft through which the fire was sure to go, practically cut off from the rest of the building, and for that purpose it served an admirable design. The only fault he found with the staircase was that they had winders at the bottom of a flight. That was quite contrary to the regulations of the County Council with regard to any proof staircase. It always seemed to him an exceedingly curious thing that the L.C.C. should lay down in every particular such exceedingly stringent regulations which had to be complied with literally in every respect, and yet they could build a warehouse five or six stories high with simple wooden joists and no ceiling at all. That seemed to him to be a matter which ought to come under some regulations; because they might have fire-resisting staircases, but considering the materials which were stored in a great many of these factories and workshops a fire would break out and would rise from floor to floor in an incredibly short space of time if there were no ceilings, as there need not be. Instead of having these vexatious restrictions and technicalities if the County Council was simply to pass a resolution that every building of the factory and workshop kind must be so constructed as to satisfy them that it was fairly fire resisting, it would do a good deal of good. Although Mr. Searles-Wood was unable to bring forward a resolution from his Committee, he was quite certain that after that meeting the Council would be only too pleased to adopt the recommendation which the Science Committee had set out, and they would endeavour to induce the Fire Office to meet a Committee and see if they could arrive at a more consistent tariff.

The vote of thanks having been heartily agreed to,

Mr. H. Porter, in reply, said with regard to Mr. Max Clarke's question as to where the concrete tests were made, they were conducted by a Commission of the City of Hamburg in 1895, and would be found fully reported in "Materials and Construction," by M. and P. Johnson. As to the concrete stairs and floors, which Mr. Blashill mentioned, he could not personally give any account of a floor that was damaged simply through the concrete. Mostly the fireproof floors were damaged by the capsizing of the ironwork in them.

The Next Meeting.

The Chairman announced that the next meeting would be held on April 20, when Mr. E. T. Hall would read a paper on "Four Modern Hospitals of Different Types," illustrated by working and detailed drawings.

REBUILDING IN REGENT-STREET, W.—A clearance has just been made of the sites of some houses, including the former "Blanchard's" Restaurant, on the north side of Beak-street. The ground is being prepared for the erection, after plans and designs made by Messrs. G. R. Crickmay & Sons, of new premises for Messrs. Robinson & Cleaver, upon the sites of Nos. 156 and 158, Regent-street, of the seven houses in Beak-street at the side, and of some four or five houses in King-street at the rear. The two houses in Regent-street form part of the block built in 1820-1, and designed by Soane.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS:

WOODEN STRUCTURES.

A METROPOLITAN District meeting of this Association was held on Friday last week in the Westminster Palace Hotel, Victoria-street, S.W., Mr. T. H. Yabbicom, President, in the chair.

Mr. J. Rush Dixon, hon. district secretary, read the minutes of the last Metropolitan District meeting, which were confirmed, and Mr. J. Patten Barber, Borough Engineer, Islington, opened a discussion on "Wooden Structures and the Powers of Metropolitan Borough Councils with Respect Thereto."

Mr. Barber said that the powers and duties of the London County Council under Section 84 of the London Building Act, 1894, with respect to wooden structures were transferred to the Metropolitan Borough Councils by Section 5 of the London Government Act, 1899, and while designated in the second schedule of that Act "minor powers and duties," their exercise had brought great responsibility on Borough Councils and their engineers. In advising his council respecting applications for licenses for the erection of wooden buildings, stands, gantries, and other wooden structures, the engineer had to consider the danger from fire and from the loads which the structures would have to sustain. Simple as an application might seem, there were very serious questions involved in it for the officer responsible for advising upon it, both in examining the plans and detail drawings and in inspecting the structure during its erection, and again at the expiration of the license in case of application for renewal. It was to be feared that persons applying for these licenses did not understand the responsibilities resting on Borough Councils and their engineers in connexion with these structures, and that they regarded their requirements of detailed drawings showing accurately and fully the mode of construction, and the situation of the structures with respect to neighbouring buildings, as faddy and unnecessary. Should disaster occur, however, the Authority and its officer would be the foremost to receive blame and condemnation, and the loudest clamour would be made by those who expect that rough and ill-considered plans are sufficient to enable any one to arrive at a complete understanding respecting a proposed structure. In view of the risk of fire being communicated to and from wooden buildings, and of the terrible consequences of the failure of stands and other similar structures, the duties and responsibilities of Borough Engineers in connexion with the administration of this section of the Building Act were of no minor character. But there would be no shrinking from responsibility nor evasion of duty, and, as the examination of these structures by District Surveyors had given the public confidence in their stability, and had been regarded as a guarantee of their safety, the Borough Engineers of the metropolis would not allow that assurance to be weakened or destroyed now that the erection of the structures had come under their supervision. Much confusion and difficulty had arisen owing to the imperfect legislation connected with the transfer of the powers referred to, and from the first it was foreseen that in the working of Part VII. of the Building Act, under the incomplete provision which had been made therefor in the London Government Act, 1899, there would be uncertainty, friction, and misunderstandings. In dealing with the subject reliance seemed to have been placed in Section 29 for providing a remedy for any deficiencies and shortcomings in the Act, but this could scarcely be regarded as a justification for the inefficient character of the legislation on the subject under consideration. The intricacies of the London Building Act, 1894, were so well known that in attempting to express one's views on any part of it it was necessary to state that they were put forward with a due consideration of the uncertainty of one's position and of the scope which existed for disagreement. It was hoped therefore that what was said would be received as impressions rather than regarded as dogmatic opinions. There was apparently nothing in the Building Act, or in the London Government Act, which would prevent the London County Council dealing with a wooden building or a wooden structure under Sections 82 and 83 of the first-mentioned Act (with the exception of "coronation stands," which the King's Bench Divisional Court, in Metropolitan Borough of Westminster *v.* London County Council, decided must be dealt with by the Borough Councils under Section 84, and not by the London County Council under section 83 of the Building Act). Apart from these structures, however, it seemed that the London County Council might have jurisdiction, under Sections 82 and 83, in the same cases as the Borough Councils had under Section 84, and that an application which had been refused by one authority might be submitted to and granted by the other. There was no definition in the Building Act either of "building" or "structure," and unless a building was a structure a Borough Council could not issue a license for the erection of a wooden building. In Sections 82 and 83 the words "building or structure" were used, and the omission of the word "building" from Section 84 was remarkable. It might, perhaps, be urged that the Borough Councils had no jurisdiction in the case of wooden buildings, and that their powers related only to wooden structures. A license having been obtained from a Borough Council, the builder or the person directing the work to be executed must give notice to the District Surveyor and supply the information relating to the building or structure specified in Section 145, Sub-section c. of the Building Act; and the work was subject to the supervision of the District Surveyor pursuant to Sections 138 and 146 of the Act. Doubts having arisen as to the duties of District Surveyors respecting wooden structures under Section 84, the Westminster City Council and the District Surveyors' Association obtained the following decision of the King's Bench Divisional Court on several questions:—

"1. The powers, duties, and liabilities of the district surveyors with respect to the supervision or inspection of wooden structures, falling under Section 84 of the London Building Act, have not been transferred to the City Council and its officers; but the district surveyors have no powers, duties, or liabilities under the licenses granted by the City Council.

2. Wooden structures falling within the said Section 84, are works of which the district surveyor should have notice under Section 145 of the said Act in a proper case

3. The right to receive the fees for such supervision and inspection, specified in paragraph 15 of the said special case, has not lapsed nor has it been transferred to the City Council or its officers."

The position created by the latest attempt at legislation for the improvement of local government in London was obviously an awkward one for all concerned with wooden structures. The Borough Engineer advised his council on an application for a license, which was granted by them subject to conditions which they imposed; the erection was supervised by the Borough Engineer on behalf of the Council, and the builder naturally regarded him as the person whose directions he must follow, and whom he must satisfy. But the builder must give notice to the District Surveyor who knew nothing of the Borough Council's requirements, and had no copy of the plans or of the license, and who, moreover, had neither powers, duties nor liabilities under such license: he, perhaps, made requirements of his own in addition, or contrary, to those of the Council. In the the police-court, where the builder would be called upon to answer for his failure to comply with the conflicting requirements of the Borough Council, and the District Surveyor, the confusion would be complete, the former taking proceedings under paragraph *e* and the latter under paragraph *d* of Sub-section 3, Section 200, of the Building Act, 1894, and Section 7 of the Amendment Act, 1898. The remedy for the present unsatisfactory condition of this subject might be obtained by further legislation determining all the powers, duties, and responsibilities of the London County Council and District Surveyors with respect to wooden structures licensed by Borough Councils, or by transferring the administration of Part VII. of the Building Act to the Borough Councils, and determining the above-mentioned powers, &c., with respect thereto. Through a defect in paragraph *d* and *e* of Sub-section 3, Section 200, of the Building Act, 1894, a conviction thereunder can only be obtained by taking proceedings under Section 7, or Sections 6 and 7, as the case may be, of the London Building Act, 1894 (Amendment), Act, 1898. A Borough Council might proceed under Section 170 of the Building Act, 1894, for the demolition of a structure, where the conviction had been obtained by such Council.

The Chairman, in inviting discussion, said that at Bristol the difficulty dealt with by Mr. Barber had been overcome by appointing him (the Chairman) District Surveyor as well as Borough Engineer.

Mr. W. Weaver, in proposing a vote of thanks, said that at the present time it seemed to him that the only result of the amended legislation of 1894 and 1898 had been to make people pay twice over for the same thing. The practice in his district was for the applicant to pay 5s. when he deposited plans for a wooden structure, a further fee of 5s. for the license, and then the District Surveyor came along and drew his fees in the usual manner. That state of affairs ought not to go on. His remedy was a more drastic one than that hinted at by Mr. Barber. His (the speaker's) remedy was one he had advocated for the past twenty years, viz., that the work in London should be put on the same footing as the work in the towns throughout the country—*i.e.*, that the functions of the District Surveyors and the Borough Surveyors should be amalgamated, and that the Borough Council of a district should have the direction of the work of a district—that it should have not only the supervision of the water-closets, say, of a building, but the building of which the water closets formed a part. That would lead to a great simplification of the work of the Metropolis, and tend to elevate the position of the Borough Surveyor. The convenience to the public would be great, as would be realised when they thought of the trouble a country builder was put to when he started work in London—say, in developing a piece of land. The duplicating of plans and the applications necessary to the authorities led to much loss of time. The work of the London boroughs should be assimilated to the work of the boroughs throughout the country. There was a strong opinion in that direction at the present time. He had recently had a letter from a leading member of the London County Council urging him to do what he could to press on the matter, and a circular had been sent out from the Paddington Borough Council to all the Councils in London, asking them whether they would appoint delegates to a conference to consider the transference of duties of District Surveyors to the Borough Councils. There seemed to be a great deal of apathy on the part of the Borough Councils on the subject. They often did not grasp the difficulties of the situation as well as their officers did, and he would urge on the Borough Surveyors to do all they could to bring about the reforms he advocated. Failing that, the present confusion with regard to wooden structures must not be allowed to continue, and if the Act were not transferred entirely, some amendments would be necessary. He had already asked his Council for advice in the matter, and his Report had been referred to the Law Committee. He wanted his responsibility fixed, and he thought it would be well for other Surveyors to do something of the same kind. If an accident happened and lives were lost or people seriously injured, there was a great disposition for juries to saddle the blame on some official, and it was just as well to know what one's position was.

Mr. W. Nisbet Blair seconded the vote of thanks. He had, he said, experienced many difficulties in regard to these wooden buildings. One of them was as to distinguishing between what might be approved by the District Surveyor acting for the London County Council, under Sections 82 and 83 of the Building Act, and what might be approved or erected under license by the Borough Council under Section 84. He had found that difficulty and had written to the Superintending Architect of the County Council, asking him if he would advise whether, in cases given, this building or that building was one which ought to be approved by the District Surveyor, or one which might be licensed by the Borough Councils. The reply to that letter did not elucidate the matter. Borough Surveyors were left absolutely to their own judgment often. The position of District surveyors, as determined by the High Court, was in conflict with the position of the Borough Surveyor, though so far he had avoided any ill-natured controversy with the District Surveyors. The proposals by Mr. Weaver were approved by a conference of London Municipal Surveyors, and the result was that in the London Building Act Amendment Act certain powers were transferred to the Borough Councils *i.e.*, the supervision and licensing of temporary wooden buildings, the executive powers in regard to sky signs, and regulations as to the stacking of timber on vacant land. Those were the three powers and duties transferred to the Borough Councils in reply to their request that they should be placed in charge of all building operations in their districts, so that any builder in executing work might be directed by one authority and its officers. Having so completely failed to get what they wanted then, his Council thought, when they received the circular from Paddington, that it was utterly futile to raise the subject again. He did not think, therefore, that that method of getting fresh legislation could be entertained. What course, therefore, was available? It was obvious that District Surveyors did not wish to lose control of buildings, for they were not salaried officers, and they depended on the fees they received. Under the Borough Councils, the fees for supervision did not go to the officers. After the Borough Surveyor had seen that a building was erected according to plans which he had examined and approved, the District Surveyor came along, had a look at the work, and sent in an account for fees for doing so—and he got them, for he had power to sue. A District Surveyor had suggested to him that without involving the Borough Councils in any fiduciary arrangement with the District Surveyor, it should, in its licenses, require the building licensed to be in accordance with the plans approved and to be carried out to the satisfaction of the District Surveyor, he being named in the license as the officer to whom satisfaction must be given in the erection of the building. District Surveyors were competent gentlemen, and Borough Surveyors should be careful how far they undertook a personal liability in approving that which might have elements of very considerable risk, and for that reason he thought that that solution was in some respects not at all a bad one. It was, practically, transferring back to the District Surveyor that power which was given to the Borough Councils by the Building Act Amendment Act of 1899. The duties then transferred were a little insignificant, but they were onerous, and Borough Surveyors had not appreciated them and did not want them. In further illustration of his point as to the difficulty of distinguishing between buildings referred to in Section 83 of the Act and those in Section 84, a wooden-frame building covered with corrugated iron, with its sides of corrugated iron, and with one of its sides against a brick wall would not be a building for Borough Surveyors to license; it would be a building to be approved by the District Surveyor. But if the corrugated iron were stripped off it became a wooden building which they could license. What had actually happened was this: in a certain rapidly-growing district in London, where many people desired to add what they called a "shed" at the end of a house, but which, by the provision of a door, became a room of the house and gave valuable additional space, the builders had endeavoured to get the consent of the London County Council to such additions. The County Council had disapproved of these buildings, and the builders had then made fresh tracings of the same things, omitting the corrugated iron, had sent them to the Borough Councils and had asked for and got approval for these "temporary" buildings. Thus a structure was erected that was actually worse than what had been disapproved by the District Surveyor. Then there was the question whether these temporary buildings might be erected at a less distance from the centre of the street than the Act prescribed. The feeling of the County Council as to buildings essentially of a temporary character—a rabbit hutch, or a hen house, or a bicycle-shed in a garden, for instance—was that such erections must not be within less distance than the prescribed distance from the centre of a street, and must not be in advance of the general line of building. That made one wonder what the Section was really devised for, and his opinion was that the first thing the draughtsman who prepared the Section had in his mind was stands to view processions. But in ninety-nine cases in every hundred those stands were erected in advance of the general line of building, and, therefore, they could not be made to apply to other requirements of the Council. Therefore, the Council had given instructions that when these buildings were obviously of a temporary character and required for only a few days that no objection was to be made if they were beyond the general line of building.

Mr. Norman Scorgie, Hackney, said he thought that Mr. Barber had put the responsibility in reference to these structures at a rather high altitude. He had not experienced the difficulties Mr. Barber suggested would come to the Borough Surveyor, but perhaps that was because he had had to deal with very genial district surveyors. Any case which came before the District Surveyor which the latter thought he (the speaker) should deal with was handed over to him, and any case which he (the speaker) thought was within Section 82 or 83 he handed over to the District Surveyor. The point had been raised as to structures beyond the general building line, and whether temporary or permanent, he thought that was a matter for the County Council only. He recently had a curious case to deal with. A house with a long forecourt became occupied by a photographer, who put a show case, erected on posts fixed into the ground. He (the speaker) at once communicated with the London County Council, who first granted the photographer a license for twelve months, renewed it for a second period, but declined on the third and threatened the photographer. The photographer, instead of removing it, cut the posts at the ground level and put four little wheels on the structure. The Council then found that they could do nothing as the structure had become a "temporary" one. They referred the case to the Borough Council, but the Borough Council declined to do anything and so the structure remained to the present day. The difficulty was to know where one responsibility commenced and another ended. In his district he thought the district surveyors had handed the responsibility over to the Borough Council, but the only structures he had had to deal with had been motor-car sheds or erections to cover bicycles, and his Council would not grant any license for a wooden structure which was tacked on to the end of a house. Since the Act came into force they had granted about four or five licenses, and they only licensed for a very limited period. He cordially agreed with what Mr. Weaver had said as to transferring powers, but if that was to be done he thought Borough Engineers must have a separate and distinct appointment, independent of the Councils. One knew very well that there were, especially in the metropolis, influences at work to get a Council to sanction structures which were not strictly in accordance with the Act.

Mr. Newton, Paddington, said that the procedure they followed in Paddington was much like what had been described elsewhere, except that they did not recognise the office or the authority of the District Surveyor. They considered that on the judgment given in the King's Bench, or rather the case which was stated, so far as the license referred only to the Borough Surveyor, to that extent only was the builder under the authority of any officer—that was to say, that unless the license referred to the District Surveyor, he had no authority to inspect a building. That view was not shared by District Surveyors, and there were many cases arising out of that conflict of authority, and no doubt that operated in many cases very unjustly against the builder. He had a case recently where he licensed some eighty wooden huts as coal sheds. (At that time his Council only charged a fee of 5s., but now they charged an extra fee of 5s. for supervision by the Borough Surveyor.) After the sheds had been erected, the District Surveyor demanded a fee of 15s. for each hut—the huts did not cost as much to erect—but he took out a summons for only one hut, so that the matter might be dealt with in the police-court, and the builder paid the fee rather than incur extra expense. If a summons had been taken out for all the huts, the Council might have assisted the builder to fight the case.

Mr. Winter, Hampstead, said the transfer in 1899 was a most unnecessary alteration in the law. Builders, especially country builders doing work in London, were put to much trouble and inconvenience owing to the present state of the law. A country builder recently got into difficulties for not giving notice in regard to some small drainage work, being under the impression that the Building Acts of London were similar to the Acts in the country. The only rational proceeding, it seemed to him, was for the Building Act to be entirely supervised by the Local Authorities or by the London County Council. To select

a few minor matters for transference to the Local Authorities seemed to be absurd. He had had no little difficulty in respect to wooden structures in his district. The Borough Councils should persevere until the Building Act was administered by them: the By-laws, &c., could be settled by the Central Authority, but as to administration, London ought to conform with the practice in the provinces.

Mr. Harrison, Southwark, said that stands were erected in his district during the Coronation to accommodate over 100,000 people, and some of those stands were to accommodate 4,000 persons. It had been suggested that Borough Surveyors should approve the plans for such structures, and that District Surveyors should supervise them. But how was that responsibility to be divided? Would the District Surveyors supervise the structures in accordance with the requirements of the Borough Surveyors? and if an accident occurred who would be responsible? Some plans submitted during the Coronation were of a very rough character. Out of every 100 plans submitted to him he had to correct 95 of them. Some plans were submitted by people who had not the least idea of how to utilise timber, and some architects seemed to have got out of the way of putting a timber structure together. A fee of 5s. was charged on application, and another fee of 5s. on approval, and in some cases they charged a little more in accordance with the accommodation, and altogether they took 600*l.* in fees. Then the District Surveyor wanted his fees, and in some cases he wanted alterations made. He gave instructions, however, that in no case was an alteration to be made in what he had passed, but one of his Council's own wooden structures was condemned by the District Surveyor. He did not take it down, however, but asked the District Surveyor to do so if he thought it was dangerous, but in all cases the District Surveyor refused to condemn the structures as dangerous. In one case he and the District Surveyor both approved, but the District Surveyor's assistant subsequently condemned the structure. As to the fees, the District Surveyor had been successful in getting them in all cases, though the opinion was expressed that the high fees ought not to be charged, but some modified fees. He had recommended his Council to disapprove of ordinary wooden structures, for had they the full power under Part 7 of the Act they would be able to do good work. Inferior wooden structures had been erected in various parts of London, and if Part 7 was taken out of the hands of the County Council, it would be a great improvement in local government. Borough Councils had opportunities for dealing with wooden structures that District Surveyors had not.

Mr. Gamble (Metropolitan Fire Brigade) said that as an old borough surveyor he knew what the difficulties were of defining what was and what was not a temporary structure.

The Chairman said the bottom of the trouble seemed to be filthy lucre. If Metropolitan Authorities had the courage to do what some of the large towns had done, *i.e.*, abolish fees and pay their officers properly, it would be a great deal better. For his part, he would be sorry to think that any part of his income was derived from fees paid by a builder. At Bristol they would be sorry to return to the days when builders had to pay fees to have their plans passed and their buildings superintended. A borough surveyor, or district surveyor—in either capacity the officer was much more independent if paid direct by his Council.

The vote of thanks having been agreed to,

Mr. Barber, in reply, said that several speakers had referred to temporary buildings. Section 84 had nothing whatever to say about temporary buildings or structures, but only referred to wooden structures. Temporary structures were referred to in Section 83.

A smoking concert was then held.

WESLEYAN METHODIST CHAPEL, OKEHAMPTON.—A new Wesleyan chapel is to be erected at Okehampton. Mr. John Wills, of Derby, is the architect, and he has prepared plans for a building 53 ft. long by 35 ft. 6 in. across the nave, and 47 ft. across the transepts, provision being made for a gallery at the front end. There will be seating accommodation for 475 persons. The design is Gothic, and includes a spire of 75 ft. The walls will be of local stone with ashlar dressings. At the rear there will be ministers' and choir vestries with the usual offices, and a schoolroom, with four classrooms. Mr. H. Geen is the builder.

COMPETITIONS.

BAPTIST CHURCH, BEVERLEY-ROAD, HULL.—The competition recently held for this church has been decided in favour of designs submitted by Messrs. George Baines, and R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C.

REGULATIONS RELATING TO PROTECTION FROM FIRE.

A MEETING of the Society of Arts, John-street, Adelphi, was held on March 11, when the Fothergill Prize Essay, entitled "Existing Laws, By-laws, and Regulations Relating to Protection from Fire, with Criticisms and Suggestions," was read by Mr. T. Brice Phillips. Sir W. H. Preece, K.C.B., presided.

Mr. Phillips dealt with the chief general statutes in which were provisions relating to the subject, local statutes, by-laws and regulations, laws relating to prevention of fire, and laws relating to extinction of fire. In regard to laws relating to prevention of fire, he said the by-laws comprise, perhaps, the most important part of the preventive laws. With regard to by-laws made under Section 157 of the Public Health Act, 1875, it was difficult in some instances to define how far they actually refer to fire protection, and how far to other matters. The Act sets out that they are made "for securing stability and the prevention of fires, and for purposes of health." "Stability" and "prevention of fire" were included in the same sentence, but the means adopted for securing stability did not necessarily conduce to the prevention of fire. It had been noticed that the main provisions of the by-laws control the thickness of walls. So far as stability was concerned, it was a fundamental principle of building construction that the lower walls of a building of several stories should be stronger than those of the higher stories, inasmuch as the former have to carry greater weight. This principle had been faithfully adhered to throughout the by-laws. But it should be observed that so far as the prevention of fire alone was concerned, the danger increased as the higher parts of a building were reached. From this it would follow that if thickness of walls were the only protection against fire, the walls in the higher stories should be more stable, and therefore thicker, than those in the lower parts. This was, of course, impracticable, but the argument showed that "securing stability" and "prevention of fire" were not identical under all conditions. It would have been better if the distinction between the two things had been more clearly defined in the Public Health Act. The fact, also, that the Act empowered Urban Authorities to make by-laws with respect to the structure of walls, foundations, roofs, and chimneys only precluded any further preventive measures being enforced in upper stories. Had the fact of the increasing danger from fire in the higher parts of buildings been kept distinct from the question of stability, it was probable that the necessity of making by-laws for the inner constructive details of upper stories of buildings would have become more apparent, and that some minor risks, now entirely unprovided against, would have been minimised.

By-laws did not in some respects fall into line with the requirements of the present time. Since 1875, the date of the Act under which the principal ones were drawn up, many advances had been made in building construction, and particularly with regard to the prevention of fire. Valuable experimental work has been carried out in various spheres as to the effect of fire upon different materials and under varying conditions. In this respect the efforts of the British Fire Prevention Committee deserved to be mentioned, for under the auspices of that Committee valuable work had been performed. Furthermore, it was a subject of keen discussion in architectural and building circles which of two distinct types of building construction possessed the greater advantages, that of slow combustion, or that of non-combustion (or fire-resisting). The by-laws referred simply to the use of "incombustible materials." Such a term needed definition, as was shown by the fact that a schedule had been added to the London Building Act, 1894, specifying the materials which shall be deemed to be "fire-resisting" within the meaning of that Act. From the foregoing remarks it would appear desirable that the by-laws made under the Public Health Acts, in so far as they relate to protection from fire, should be remodelled upon more modern lines. Other by-laws of more recent date had also been severely criticised in technical circles. Such are those made by the London County Council under the Metropolis Management and Building Acts Amendment Act, 1878, for the protection of theatres from fire, and the regulations as to means of escape from fire for factories and workshops. It was sometimes argued that by-laws and regulations were so detailed as to defeat their own ends by rendering proper inspection impracticable; that they were of too bureaucratic a type to be of practical use; and that they pressed too harshly upon property owners. Such criticisms were generally made in architectural quarters, and some allowance must be made for the fact that all restrictions contained in by-laws must, of necessity, hamper to some extent the freedom of that profession. The two criticisms that the by-laws defeat inspection by reason of their minuteness, and that they were too bureaucratic, did not carry much weight in themselves. It was most regrettable that no official records had been kept of the effects of fire upon buildings. Work of this nature should be entrusted to fire inspectors, whose duty, in addition to administering the preventive laws, would be to inspect and make after-fire reports to their several departments. Had this been done during the last twenty or thirty years much valuable official information of a reliable kind would now be available, which would indicate how far existing laws had protected property from fire. The work here outlined was not such as the chiefs of fire brigades could be expected to perform. The reports of those officials now contained some particulars of damage done to buildings, but they were not of the detailed character which properly qualified fire inspectors would have prepared. Some work of the kind was carried out at Glasgow, as the following extract from the Report of the Glasgow Fire Brigade for 1901 showed:—

"Defective building construction still bulks largely in our list of causes of fires. This is an inheritance that willlast for a long time. Improvement may be looked for in the stringency of the Building Regulations Act, and in the inspection and proper repair of all buildings damaged by fire from this cause. All fires arising from defective building construction are at once reported to the Master of Works, whose staff visit and instruct how restoration is to be safely carried out."

Fire inspectors should be given some similar powers to those of surveyors or sanitary inspectors, and premises where fire had occurred should be brought under the operations either of special building by-laws, or it might be convenient, by extending the meaning of the term "nuisances," to bring such premises under Section 91 of the Public Health Act, 1875, so as to ensure that in reconstruction proper precautions were taken against a recurrence of fire. The larger boroughs should appoint their own fire inspectors, but other Councils should be invested with power to unite for the purpose of such appointments. A similar power of combination by District Councils was already contained in Section 286 of the Public Health Act, 1875, as to the appointment of medical officers of health, and in any legislation upon the present subject the section might, with slight modification, be made applicable to the appointments now suggested.

Another criticism raised as to by-laws was that they apply to new buildings only. The coroner's jury, in their verdict on a recent fire in Queen Victoria-street, London, recommended that the London Building Act of 1894 should be made retrospective in the matter of provision of escape from fire. Involved in such a recommendation was a principle with which, in the past, the Legislature had not too readily interfered. In most Acts of Parliament a distinct line had been drawn between existing, or old, and new properties. Throughout the Public Health Acts this distinction was specially observable, and those Acts seemed to be permeated with the doctrine that old buildings were not to be tampered with unless actual necessity arose for so doing. For instance, the Local Authorities had no power to insist upon alterations in sanitary arrangements, however obsolete they might be, so long as they were not defective, or did not, through such defects, create nuisances. When nuisances arise the Authorities had powers to specify the works necessary to be carried out. So jealously had the Legislature guarded the rights of property owners in this matter that it had been by gradual steps only that any alterations in the law had been made. Indeed,

it was sometimes necessary to prove actual injury to health before any action could be taken under the Public Health Acts. This latter condition had been found to unduly hamper the operations of Sanitary Authorities, and, as a consequence, the corresponding section in the London Public Health Act of 1891 was altered to include any premises "injurious *or dangerous* to health," thus giving the right of action in the face of danger, apart from the question whether injury had arisen or not. A further proof of the distinction drawn between new and old property was found in the Factory and Workshop Act, 1901. Section 14 had reference to fire escapes, both for new and old factories; but it was noticeable that the requirements for both, though apparently the same, were defined separately, indicating that what might be considered a "reasonable requirement" in the case of new factories or workshops might not be so in the case of existing buildings. Hence, a precedent, to take the drastic step of making by-laws as to fire prevention retrospective, remained to be established, and doubtless there would arise practical difficulties in the way of applying one and the same by-laws without distinction to all buildings. A somewhat similar proposal, to make the Factory and Workshop Act, as to the provision of means of escape from fire, apply to all factories, irrespective of whether more than forty persons were employed therein, had been made in some quarters. The Legislature, in the Act of 1901, retained that number, which had first been mentioned in the Act of 1891, Section 7 (1) and (2), and introduced a new provision in the Act of 1895, Section 10 (3) as to doors, to facilitate escape in rooms where more than ten persons are employed. That provision had been made more stringent by Section 16 of the Act of 1901. Gradual steps had thus been taken in reducing the specified number of employed persons in factories to which the Acts apply. Altogether it seemed a proper course gradually to bring about such alterations, rather than to precipitate great changes. In view of the criticisms which had been made with regard to existing by-laws, it should be stated that those by-laws had certainly not been without useful effect, although there were only meagre official records as to their precise results. A Report of the London County Council stated that in 1886, 25 per cent. of the fires in London were classed as serious, that was, fires involving considerable loss. The number was now reduced to between 3 and 4 per cent., although fires were now returned as serious which would not have been accounted so thirty years ago. Two factors had doubtless contributed to this, (*a*) the effective carrying out of the Buildings Acts by the Council, and (*b*) the increased efficiency of the fire brigade.

In some general remarks the author said that included in any legislation should be arrangements for some central department for the collation of reports and statistics. A marked feature in most reports was the large number of fires in private dwellings, thus :—

Year.	Town.	Total number of fires.	Total number in private dwellings.	
1901	London...	3,684	1,005	Average
1901	Glasgow...	759	364	percentage
1901	Liverpool	749	324	of fires
1901–2	Edinbrgh.	410	215	in private
1901	Dublin ...	127	49	dwellings,
1901	Paris	1,422	788	38 per cent.

It was noticeable, also, that a large proportion of these fires were caused by defects in construction of fireplaces and flues. A central statistical department could, with advantage, in such cases, keep records of whether such defects were in buildings which had come under the operation of building by-laws or not, whilst it would be the duty of the fire-inspectors, before alluded to, to report upon these defects, and suggest remedies for the prevention of a recurrence of fires. Possibly, too, the inspectors might be entrusted with the investigation of the causes of fires, as was done in the Fire Marshal's Bureau of the City of New York, referred to in a letter from the Fire Department of that city.

The question of the proper equipment of fire brigades was a matter for the consideration of the executive officers who administer the statutory regulations relating to fire. It might serve some useful purpose to attach a comparative statement of the cost of fire brigades, per head of population, in London and in some foreign cities :—

Cities.	Population.	Cost of Brigade per annum.	Cost per Head of Population.
			s. d.
London ...	4,536,063	£291,580	1 3
New York.	3,444,675	5,313,000 dols.	6 5
Paris	2,511,629	2,729,092 francs.	0 10
Berlin	1,864,203	1,796,066 marks.	1 0
Chicago ...	1,750,000	1,800,000 dols.	4 2

Amongst other matters for consideration would be some of those referred to, *i.e.*:—

I. A general inquiry into fire preventive laws, as distinct from laws as to fire extinction, and as to any modification required in the powers given Local Authorities to make by-laws for the prevention of fire in buildings.

II. Whether, and if so, to what extent it was expedient to make the laws and by-laws in relation to protection from fire retrospective.

III. As to the desirability of appointing fire inspectors, their qualifications, duties, and as to the areas to be placed under their charge.

IV. As to the necessity of amending laws in relation to the conveyance, storage, and sale of inflammable goods, and more particularly whether existing laws could be amended or new ones framed which will tend to reduce the number of lamp accidents.

V. As to the desirability of amending the laws dealing with the protection from fire of theatres and other places of public resort.

VI. As to the necessity of repealing existing laws and of making all laws relating to protection from fire compulsory; also of obtaining by law contributions from insurance companies and owners toward expenses incurred in the protection of property from fire.

VII. As to the need of creating a public fire department, to inspect the steps taken by Local Authorities, to compile statistics as to fire, and generally to supervise the administration of fire laws.

VIII. A general consideration of the Report of the Select Committee on Fire Brigades, dated July 16, 1900, and the recommendations therein contained.

IX. Subsidiary questions, such as :—

(*a.*) The position of efficient volunteer fire-brigades under the proposed amended laws.

(*b.*) The fire-protecting measures adopted in foreign countries.

(*c.*) The desirability of training school children how to act in time of panic, and in outbreaks of fire.

(*d.*) Questions of general administration.

A discussion followed, in which Messrs. E. O. Sachs, S. Chatwood, A. Casson, E. T. Scammell, and Major Fox took part. On the motion of the Chairman, a vote of thanks was accorded to Mr. Phillips, who briefly replied.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—At a meeting of this Association on the 25th ult., in the rooms, 117, George-street, Mr. A. Hunter Crawford, the President, read his fourth paper on "The Building of a House," illustrated by blackboard sketches and drawings. Dealing with drainage, he described the main principles of drain construction, size of pipes, material, &c., and compared the English with the Scottish system. Numerous other matters concerning general house-building were discoursed upon, the windows and glazing receiving considerable attention. At the close Mr. Crawford was cordially thanked.—On the 28th ult. the members paid a visit to Darn Hall, near Eddleston. Permission for the visit was granted by Lord Elibank and Mr. John R. Menzies. The house, which dates from about the end of the seventeenth century, occupies an elevated and secluded position in a romantic glen. The place was originally known as Haltoun or Blackbarony. The house contains many fine family portraits. The party was under the leadership of Mr. Thomas Ross, architect. Votes of thanks were, on the motion of Mr. A. Hunter Crawford, accorded to Lord Elibank, Mr. Menzies, and Mr. Ross. The party, having partaken of Mr. Menzies' hospitality, visited the old churchyard, where there are some interesting old tombstones.

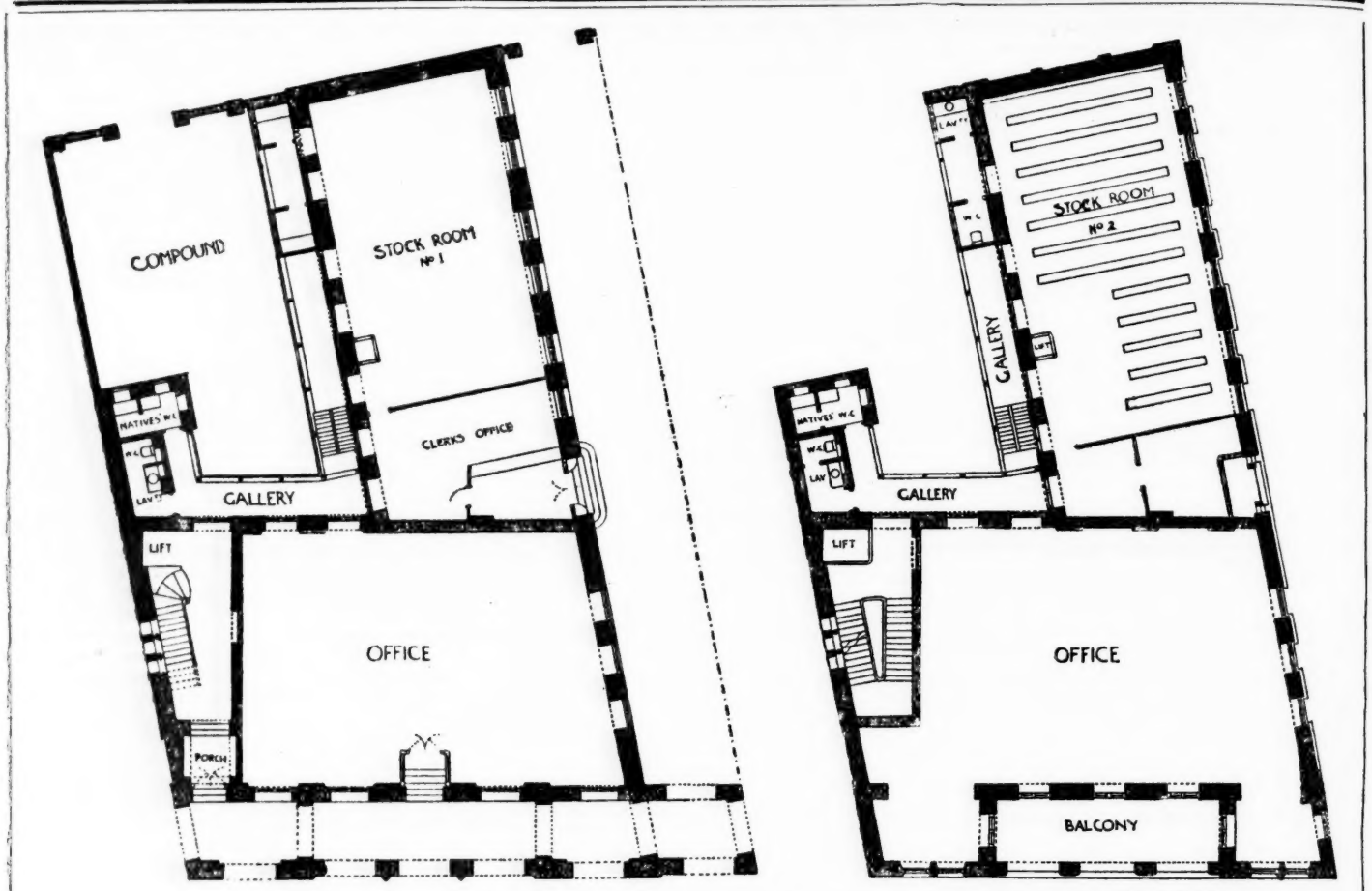
LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—The concluding meeting of the session of the Leeds and Yorkshire Architectural Society was held on the 26th ult., Mr. Butler Wilson being elected President for the third successive year. After the election of officers, Mr. R. P. Oglesby read a paper on "Sir John Vanbrugh, Dramatist and Architect." After some remarks on Vanbrugh's plays, he went on to observe that the line which divided Vanbrugh's work as a playwright and his career as an architect was clear and decided. There was, in a sense, a slight overlapping of vocations, inasmuch as his first completed architectural work was a theatre in the Haymarket. This sudden leap from the drama to architecture was taken as a glorious joke by his brother wits and litterateurs, who forthwith let loose such a flood of sarcasm and raillery upon his architectural efforts as would have crushed with ridicule any ordinary individual. A house that Vanbrugh erected for his own occupation on the site of the ruins of old Whitehall was dubbed by the wits the "Goose Pie." The first great scheme of this imaginative but unschooled architect was the design and erection of Castle Howard, Yorkshire, for the Earl of Carlisle, in 1702. His want of training was here observable on all hands, but his genius for the picturesque atoned for many defects, and the Earl of Carlisle was so satisfied with the designs for Castle Howard that he created Vanbrugh Herald Clarenceux King at Arms. Walpole declared that the Mausoleum there "would almost tempt one to be buried alive." In the east wing of the south front of Castle Howard there are, contrary to classic law, an even number of sub-divisions—viz., eight, whereas to the west wing are allotted nine such spaces. Mr. Oglesby advanced the theory that Carr, of York (the architect of Harewood House), in completing the west block, added another space, thus correcting Vanbrugh's mistake. Among other notable buildings designed by Vanbrugh were Clarendon Building, Oxford; Seaton Delaval; King's Weston, near Bristol; Fleurs Castle, Roxburghshire; Kneller Hall, Hounslow; Grimsthorpe, Lincolnshire; and Stowe, Buckinghamshire. Reserved to the last was Vanbrugh's greatest work, "Blenheim," erected by a grateful nation for the first Duke of Marlborough. The plan of Blenheim at once stamped Vanbrugh as a man of powerful imagination, and, concluded the essayist, notwithstanding his glaring want of refinement and taste, he would, had he lived longer, and further studied, have become a really great architect. His ponderous extravagances, however blamable in detail, were never contemptible in the whole; but it was this love for the ponderous in architecture that inspired Dr. Evans' witty and not inappropriate epitaph :—

> "Lie heavy on him, earth! for he
> Laid many a heavy load on thee."

All the buildings of this unschooled architect were conceived on such a huge scale that it has been quaintly remarked that their ruins will have far greater effect on the minds of posterity owing to the additional piles which conjecture will supply in order to give meaning to the whole.

ENGINEERING SOCIETIES.

THE JUNIOR INSTITUTION OF ENGINEERS.—The conversazione of this Institution, which recently took place at the Westminster Palace Hotel, passed off most successfully, the attendance being greater than that of any previous similar occasion. The President, Colonel E. Raban, and Miss Raban, and the Chairman, Mr. Kenneth Gray, and Mrs. James Gray, received the guests. In addition to the usual musical arrangements, prominent features in the programme included a limelight lecturette on "London Traffic: an Unsolved Problem," by Mr. James Swinburne, President of the Institution of Electrical Engineers; a potter's wheel, with an operator at work at it, by the courtesy of Messrs. Doulton & Co.; an improved photometer, shown by Messrs. Alex. Wright & Co.; the Kinemat angular hole drilling-machine; a new system of ship propulsion and steering, the invention of Mr. W. Cochrane; Nodon's electrolytic rectifier; timber vulcanised by a process of Mr. W. Powell; and in the general exhibition of models, &c., were some contributed by the Aëronautical Institute and Club. On March 23 the members visited the new works at Dalston belonging to the Shannon File Co. They were shown over by the manager, Mr. W. O. Stanley. The



GROUND PLAN. FIRST FLOOR PLAN.

Messrs. Macmillan's Premises, Bombay. Plan.

works are operated entirely by electric power, the dynamos being driven by two steam engines, each of 150 h.p. Steam is raised by Babcock-Wilcox boilers. The wood-working and other machinery used in the various processes of manufacture of office and bank fittings, &c., was shown running. The apparatus for heating and ventilating, and the cyclone or dust-removing plant were other special features which attracted particular attention. On Monday, April 20, the members will visit the Brook Green works of the Incandescent Electric Lamp Co.

Illustrations.

JAPANESE ORNAMENT.—PLATE V.

THESE examples are monochrome reproductions from coloured ornament, and therefore show only the formal design and the general effect of light and dark. They are in illustration of the article on Japanese ornament on another page, and are referred to and described there.

NEW PREMISES, BOMBAY, FOR MESSRS. MACMILLAN & CO., LTD., PUBLISHERS.

THE building is now nearly completed on a site in Hornby-road, part of the Government lands, and in the centre of the European quarter of the city. The work has been done entirely by native labour; but, in the case of constructional steel, lifts, and sanitary fittings, with materials imported from England.

The walls, which are very thick, are built with blue basalt in coursed rubble, with dressings of Porebunder and Coorla stone, and the roofs are covered with native tiles.

The timber throughout, both in the structure and finishings, is of teak, including the floors (except the lower one, which is of marble). The galleries are paved in some cases with Indian patent stone, and in others with coloured china mosaic—a most effective and suitable material for a warm climate. It may be of interest to note that the whole of the wooden floors were laid before the roof was on.

The cost has been somewhere between a third and a half of what it would have come to for a similar building in London. Raosahib Manaji Rojooji is the responsible contractor for the building; the constructional steel being supplied by Messrs. Dorman, Long, & Co., and the sanitary fittings provided and fixed by Messrs. Richards & Cruddus, of Bombay.

Mr. John Cash and Mr. M. Starmer Hack are the architects, Mr. Hack having superintended the carrying out of the work from the beginning.

REREDOS, ST. PETER'S, NEWTON-LE-WILLOWS.

THE illustration represents a reredos designed and executed in the atelier of Messrs. Shrigley & Hunt of Lancaster, for the Church of St. Peter, Newton-le-Willows, in Lancashire.

Mr. W. W. Brierley is the architect of the church.

CARTOONS FOR STAINED-GLASS PANELS.

THESE illustrations are from cartoons by Mr. Paul Woodroffe, for four stained-glass panels for the upper part of a screen between the hall and the servants' staircase in a private house.

They represent, as will be seen, the Four Seasons. The lower panels in connexion with them represent the signs of the Zodiac appropriate to each figure.

SKETCHES IN BELGIUM.

No country of an equivalent size appeals more forcibly to the antiquary, artist, or architectural student than Belgium, with the many old buildings, picturesque bits, and useful detail. Another and important consideration to the student who cannot afford much time and expense in travelling is that these fragments can be gathered frequently and easily from buildings closely grouped together. The travelling is so cheap that one can go there and back, say for thirty days, including hotels, railway fares, &c., for about 12*l*.

The house at Malines is a good example of picturesque domestic architecture, also the *béguinage* at Bruges is another good example. The Hall of the Skippers, one of the many guild houses at Brussels, is a fine specimen of stone building, also a novelty, for the top is in the shape of a ship, with cannons, &c., complete.

Of all the cities of Belgium, Bruges has best preserved its mediæval characteristics, though the town now presents but a dull and deserted appearance. The city was long the residence of the Court of Flanders. It reached the culminating point of its prosperity during the first half of the thirteenth century, when the Dukes of Burgundy held their Court there. During this period a brilliant colony of artists were retained at Bruges in busy employment, and their works still shed a lustre on the name of the city. E. STANLEY MITTON.

THE SURVEYORS' INSTITUTION.

AN ordinary fortnightly meeting of the Surveyors' Institution was held on Monday last week at No. 12, Great George-street, Westminster, Mr. Arthur Vernon, President, in the chair.

The minutes were read and confirmed, and Mr. Penfold, Hon. Secretary, announced some donations to the Library and the Library Fund, and a vote of thanks was accorded to the donors.

Mr. J. L. Crouch then read a paper on "The Rating of Brickfields." In the course of his remarks the author said that the properties which were the subject of special rating were not numerous, and he should attempt to show that the clay-working properties comprised in the expression "brickfields" should be included among them. The few cases of brickfield rating which had been the subject of litigation in the High Court assist the settlement of the question to a limited extent only. It was a matter for some surprise that their number was so small, the industries being distributed over nearly the whole of the United Kingdom, and carried on in nearly every county. The brickmakers alone numbered some five thousand or thereabouts, giving employment to an army of labour, including many highly skilled artisans. The industries of brickmaking, tilemaking of all description, sanitary pipe and other pipe making were, moreover, increasing, and it was probable that a still greater development awaited them in the future, despite the active and growing competition of foreign countries in more than one of the many branches. The use of brick and terra-cotta, both for construction and ornament, was better appreciated to-day than had formerly been the case, and manufacturers were striving more and more, and with an ever-increasing measure of success, to fulfil the demands of architects for the erection of fine buildings to the beautifying of our streets. The extent of

the purely brickmaking department in this country could, in some measure, be estimated from the fact that Peterborough alone had an output of some 500,000,000 bricks a year, the trade being the growth of the last fifteen years at the most, and being confined almost exclusively to the manufacture of bricks for construction work only. As a general rule—though not an invariable one — brickfields throughout the country were let upon lease, and frequently for seven, fourteen, or twenty-one years, at an annual surface rent, with a royalty in addition. The royalty was calculated upon the business done by the brickmaker. This was open to the remark that the tenant was purchasing the freehold bit by bit, but the courts had held that the royalty was of the same nature as rent. Were it otherwise, and the royalty admittedly paid for the clay, it would be open to the fatal objection that as clay once taken out of the pit becomes a chattel, it would escape rating, as chattels were by statute exempted from contributing to the parochial exchequer. To be strictly consistent, royalties should be based on a percentage of the selling price of the goods in the yard. It was, however, within his experience at least, much more usually fixed at a definite sum, say 1s. 6d. per 1,000 bricks. There was usually also a rebate made by the landlord to the tenant for wasted bricks of about 10 per cent., which would be inconsistent with the theory that the royalty was paid upon the clay consumed, as it could make no difference to the owner of the soil whether the clay was turned into a marketable commodity or into a brick which was unsaleable. According to the present state of the law, the rent, including royalty, formed the basis of the assessment. It was clear, however, that it was not the fact itself, but merely evidence of what the fair rent would be. On such a tenancy one would anticipate a rising and falling rent, according to the state of the market, and however much this might be another way of saying the same thing, the application of the principle laid down was a matter of difficulty, brickfields never being let to a tenant from year to year. No deduction was to be made on account of anything which had been added to the clay to make it suitable for manufacturing into bricks, such as breeze or sand, as that expense would have been taken into consideration when the parties negotiated the tenancy and fixed the rent and royalty. Brickfields were generally regarded by most people as enemies to any neighbourhood, particularly the yards which turned out the London stock, and which were, it must be admitted, generally unsavoury things. From the amount of the rates which they pay, however, they were without doubt amongst the very best friends of the ratepayers, for it frequently happened that the royalties paid in any one year would amount to the full fee simple value of the land as agricultural land only. In a paper read before that Institution some time ago by Mr. Edward Boyle, K.C., the author went very fully into the rating of coal-fields. Mr. Boyle said :—"I would suggest that any rating authority desiring to arrive at the true, gross, and rateable value of a colliery should take in consideration all circumstances in connexion with the premises, including the cost and value of the shaft and rateable machinery, the age of the mine, the quality and quantity of the coal, the rent paid under the lease, the rents recently obtained for similar coal under similar circumstances, the output, the prices obtained for the coal, and the expenses of producing and realising it." What applied to collieries in this respect applied very much to brickfields. If the rent and royalty were fair, and they would not, generally speaking, be paid if they were not, then the difficulty of assessing the property was greatly diminished, and the path of all parties was made easy. If, however, it became necessary to demonstrate the correct value, recourse must be had to the method suggested by Mr. Boyle; and he (the speaker) advocated that brickfields should be specially rated having regard to their profits, taking into consideration all circumstances in connexion with the yard, including the cost of equipment, removal of over-burden, rateable machinery, kilns and dryers; the age of the works, quality and quantity of the clay, the rent and royalty paid under the lease; the business done; the prices obtained, and the expenses of production and realisation.

On the motion of Mr. J. H. Sabin, seconded by Mr. W. P. Ryan, and supported by Messrs. J. A. Jopling and H. T. Eve, a vote of thanks was passed to the author.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Lord Monkswell, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend Poplar Borough Council 8,945*l.* for electric lighting, street lighting, and meters; Hammersmith Borough Council 7,000*l.* for street improvements; Fulham Borough Council 3,100*l.* for the same purpose; Greenwich Borough Council 7,000*l.* for paving works; Westminster City Council 92,590*l.* for widening the Strand between Nos. 89 and 104; Stepney Borough Council 30,000*l.* for electric lighting works; Wandsworth Borough Council 2,000*l.* for underground convenience at Tooting Broadway; and Stepney Union Guardians 3,669*l.* to enable them to contribute towards the expenses of enlarging the public elementary school at Stifford, Essex.

Proposed New Asylum. — The debate was resumed on recommendation *c* of the Asylums Committee in reference to the provision of a new asylum on the Horton estate.*

Recommendation *c* was as follows :—

"That an expenditure up to 97,210*l.* be authorised for the following works in connexion with the erection of such asylum, viz., foundation, 55,710*l.*; roads, 10,000*l.*; architect and quantity surveyors, 13,000*l.*; additions to central station for the supply of electric current, 10,000*l.*; sinking well, 8,500*l.*"

To this an amendment was, last Tuesday, moved by Mr. White, seconded by Mr. Goddard Clarke, "that 10,000*l.* be substituted for 13,000*l.*" for architect and quantity surveyors.

Sir William Collins supported the amendment.

Mr. Hubbard, Chairman of the Asylums Committee, said that if the amendment were carried, the matter would be deferred for a year unless the architect the Committee wished to employ (Mr. Hine) would be willing to accept the amount named in the amendment.

The amendment was, however, carried on a division, 74 voting for and 28 against.

Mr. Beachcroft then moved to add to the recommendation the following words—*i.e.*, "That the authority hereby given shall not be deemed as in any way to sanction the execution of the work, or any part of it, by the Works Department without the consent of the Council." Horton Asylum, the superstructure of which was carried out by the Works Department, had been open a year, and the Council had not yet been told what the financial result had been. There was reason to fear that the result would be found to be most unsatisfactory.

Mr. E. White seconded.

Mr. Torrance said that the report as to Horton Asylum would be brought up at the next meeting, and he protested against attacks on the Department in regard to this building until the facts were before the Council.

Mr. Hubbard said he would accept the amendment.

Fire Station, Westminster.—The Fire Brigade Committee recommended, and it was agreed, (*a*) That the estimate of 10,650*l.* submitted by the Finance Committee in respect of the acquisition of a site for a new fire-station at Westminster, be approved; that the fee simple of a site in Greycoat-place, near the junction of that thoroughfare with Strutton-ground, be acquired from the Ecclesiastical Commissioners for the sum of 10,500*l.*, the Council paying in addition surveyors' fee and solicitors' charges on the usual scales; (*b*) that the Fire Brigade Committee be authorised to make the necessary preliminary arrangements for the erection on the above site of a station in substitution of the existing Westminster fire station.

Workmen's Trains.—The Housing Committee reported having got certain concessions from the City and South London Railway Co. in respect to workmen's trains. The company has agreed to extend to eight o'clock the issue of workmen's tickets from the stations at Clapham Common, Clapham-road, Stockwell, and the Oval. All the 5d. fares have been reduced to 4d., the 4½d. fares to 4d., two of the 4d. fares to 3½d., and six of the 3d. fares to 2½d.

Mr. Sidney Webb criticised the concessions, and said they did not go far enough. Compared with the Great Eastern Co., and, indeed, with most of the London companies, the workmen's rates on this tube line were excessive.

Land Values.—For upwards of an hour the Council discussed the following recommendation of the Parliamentary Committee :—"That the principle of the rating of land values embodied in the Land Values Assessment and Rating Bill of the present Session of Parliament be approved." An amendment to refer the matter back on the ground that the proposal was not in accordance with either of the Reports of the Royal Commission was defeated on a division by 20 votes to 71.

Improvement. — The Improvements Committee recommended, and it was agreed, that the working drawings, specification, and estimate of the cost (9,000*l.*) of the paving and other works in connexion with the widening of Long-lane and Tabard-street, authorised by the London County Council (General Powers) Act, 1897, be approved, and be referred to the Works Committee, with a view to the work being carried out without the intervention of a contractor.

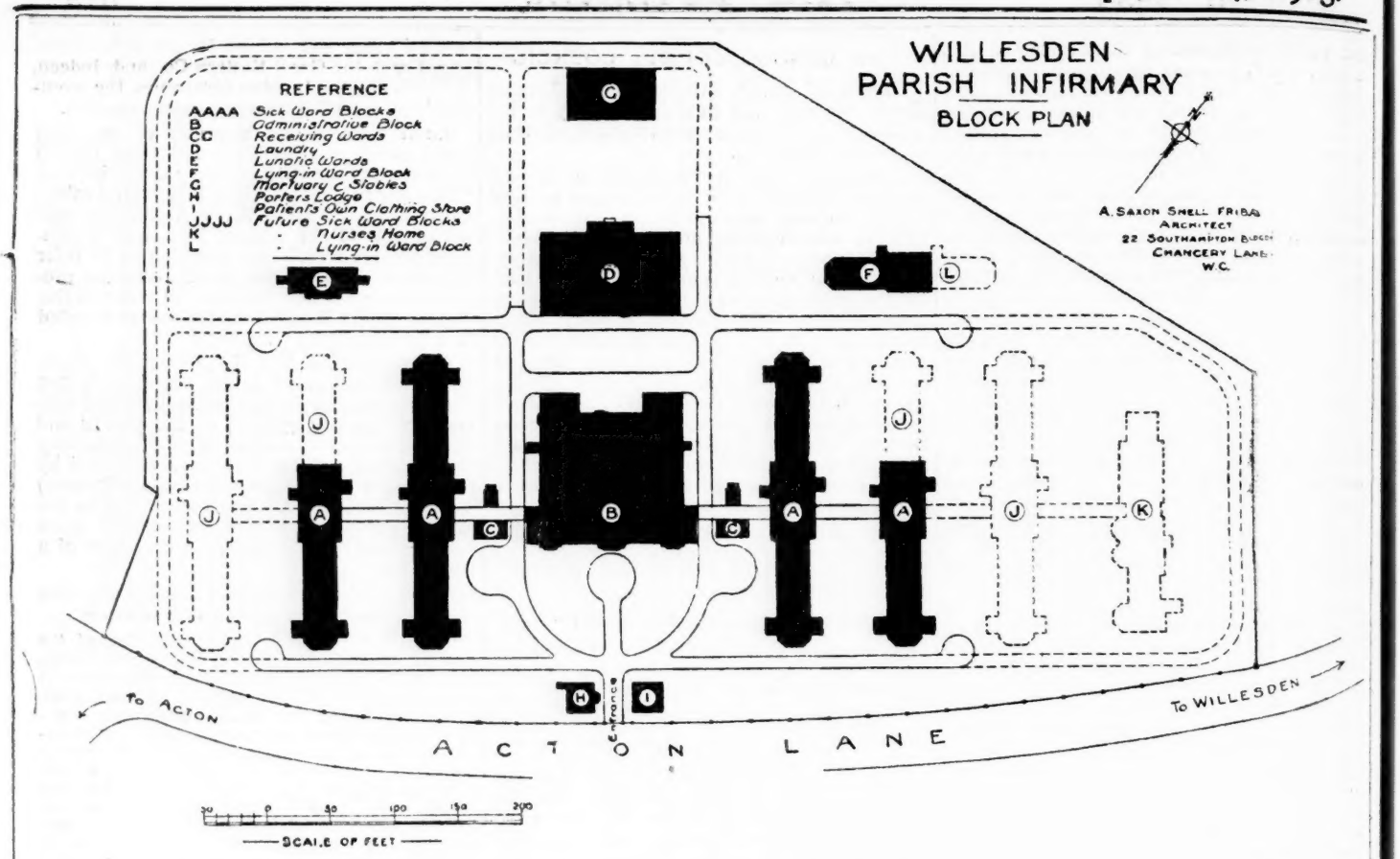
Lambeth Bridge—Proposed Rebuilding.—The Bridges Committee reported as follows :—

"We desire to bring before the Council the question of the reconstruction of Lambeth Bridge, in respect of which we are of opinion powers should be obtained in the next Session of Parliament. The present bridge is a stiffened suspension structure, the principle of construction being a combination of iron cables with lattice girders. The bridge was erected about the year 1861, and was freed from toll in 1879 at a cost of 36,000*l.* Lambeth Bridge, soon after it passed into the possession of the late Metropolitan Board of Works, was found to be in a condition which caused considerable anxiety. In 1887 the opinion of Sir Benjamin Baker was taken upon its reported critical state, and, after an exhaustive investigation, he advised that, unless the late Board was prepared to accept great responsibility, there was no alternative but to increase the stability of the structure. Accordingly, in the following year, works to strengthen the structure were put in hand, and completed at a cost of 2,984*l.* The bridge is still of inadequate strength, and has to be used under restrictive conditions, and having regard also to the increasing traffic, the building of a broader and more substantial bridge is imperative.

We have not lost sight of the position which Lambeth Bridge occupies upon the river, and bearing in mind the resolution passed by the Council on February 15, 1898, that the new Vauxhall Bridge should be built of masonry, the kind of bridge to be erected in place of the present construction has necessarily been engaging our serious attention. The question of the gradients practically decides whether it is to be constructed of steel or masonry. At present the gradients are very steep, being 1 in 19 and 1 in 22 on the north, and 1 in 20 and 1 in 23 on the south. Under an agreement the Council cannot raise the level of the centre of the road at the junction of the bridge approach with Lambeth-road and the Albert-embankment more than 3 ft. 10 in. above the present level, and as a result that height fixes the level of the commencement of the road over the bridge. Our attention has been drawn to the fact that, even if the restrictions placed upon the Council with regard to Vauxhall Bridge were considerably relaxed, in the case of Lambeth Bridge, a masonry structure could not be built with a better gradient than 1 in 25, which is about the same as the northern approach to Southwark bridge, which, on account of its steepness, is so little utilised for vehicular traffic going southwards. On the other hand, a steel bridge with a gradient of 1 in 30 can be obtained, and better facilities for navigation afforded during construction than at Vauxhall Bridge. As it is most desirable that a satisfactory understanding should be come to between the Council and the Thames Conservancy before Parliamentary powers are sought, we have submitted to that body a drawing showing generally the possible headways and waterways, both temporary and permanent, which could be provided under a granite or masonry bridge having a road gradient not steeper than 1 in 25. As the result of a conference between the Thames Conservancy and representatives of the river traffic interest, certain conditions have been imposed, one of which is as follows :—'That the headway of the openings of the temporary works in the two side arches adjacent to the centre arch should not be less than 15 ft. above Trinity high-water mark.' This, the engineer informs us, is incompatible with the construction of a granite or masonry bridge with reasonable gradients. Under the circumstances, it appears to us that there is no alternative but to erect a steel bridge, and we have accordingly submitted to the Thames Conservancy an alternative sketch which we have reason to hope will prove acceptable, and upon which we shall be in a position to report at an early date."

The Council adjourned soon after seven o'clock.

* See our last issue, p. 338, for details of the proposals of the Committee.



WORKHOUSE INFIRMARY, WILLESDEN.

THE accompanying block plan is sufficient to show the general disposition of the buildings, which have been erected on the south-west portion of the site acquired by the guardians for the workhouse and infirmary. The present buildings provide accommodation for 400, viz.:—150 sick and 250 workhouse inmates, and consist of four ward blocks (A.A.A.A.), each two stories high. The Administrative Block (B) is placed in the centre of the buildings, with communication by a covered corridor with the ward blocks. On either side of the administrative block are two receiving wards (C.C) for male and female patients, and immediately in the rear two small observation wards. Behind the administrative building is a large block (P) comprising the laundry, engine, and boiler-house, &c. In the rear of the male blocks is a small building (E) for short period lunatics. In the rear of the female blocks is a ward for lying-in cases (F). Behind the laundry block are the stables, disinfecting apparatus, and mortuary (G). The entrance gates to the buildings are flanked by two small blocks (H and I), respectively for porter's lodge and patients' clothing store. The buildings marked in dotted lines and lettered J.J. show future extensions to bring the accommodation up to the total of 616 beds. Block K will eventually be a separate nurses' home. Block L shows the extensions of the lying-in wards.

Each double ward block contains on each of the two floors two large general wards to hold twenty-two beds each for infirmary patients, or forty beds for workhouse inmates. At the end of each ward is a large dayroom, and on either side of each end of the block are towers fitted with baths, sinks, and conveniences. The centre part of the block is divided on each floor by the corridor (open on one side), which effectually separate one set of wards from the other. This form of corridor, whilst affording good shelter, adequately cuts off the various blocks from one another in case of fire. These Ward Blocks will eventually accommodate only sick patients, but it is intended for the present to devote part of them to Workhouse inmates, until arrangements are made to build proper accommodation for this class. The tops of the connecting corridors are available as ambulatories for convalescent patients, while the ground between the blocks will be used as airing courts. Each pair of ward blocks on upper floor is also connected by a light iron bridge, which acts both as a means of escape by fire or panic—they are wide enough to take beds, and as ambulatories in fine weather.

The administrative block contains on the front, the entrance hall, committee rooms, offices, and officers' apartments. Immediately in the rear of the corridor (with access to same from two branch corridors in the wings), are the general kitchen and scullery and general store room. Nurses' dining room, inmates' sewing room, matron's store room, etc., are provided on the ground floor of the south-west wing. The north-east wing is devoted to medical officer's rooms and various stores. On the upper floors of the front block and two wings are a number of single rooms for nurses' and servants' bedrooms.

The plan also includes a laundry block, lunatic wards, lying-in wards, for eight beds, with nurses' rooms on the upper floors; stables, mortuary building and a disinfecting chamber.

The external walls are faced with yellow stock bricks relieved with red bands and strings, &c., and the roofs are slated. All ward floors throughout are solid and fireproof, and constructed with concrete between iron joists. The wards themselves are plastered throughout, and painted in two heights, the floors being of hard white maple in narrow widths. All corridors are paved with terrazzo or granolithic. A deep main drain separately ventilated, traverses the whole length of the roadway in the rear of the buildings. Branch systems run between each pair of blocks, each being connected to the main drain with an intercepting trap between. The pipes are in iron, jointed in cement, and laid on cement concrete beds. The surface drainage is carried by a separate system direct into the main road. The buildings generally, including the wards, are heated by open fires, but the latter have also supplementary heating by means of low-pressure hot-water circulating pipes. Natural ventilation is obtained in the wards by means of windows with fanlights over, inlet flues, both at the floor level and at a height of 7 ft. above the floor, and outlet flues at intervals in the centre of the ceilings. The buildings throughout are lighted by electricity, generated by engines in rear of laundry, which also provides the necessary motive power for washhouse and laundry. The buildings have been erected from the designs and under the superintendence of Mr. Alfred Saxon Snell, by Messrs. Godson & Sons, builders, of Kilburn, whose contract for the work amounted to 83,918*l.* This amount does not include the contract for the foundations, which were put in by Messrs. Cowley & Drake of Willesden Green, at a cost of 5,734*l.*, 5*s.* The installation of electric light and power was designed and supervised by Mr. Morgan Williams, and carried out by Messrs. Crompton & Co., of Chelmsford, at a cost of 8,627*l.* The general engineering work, and also the kitchen fittings were carried out by Messrs. Rosser and Russell, of Hammersmith, and the laundry and washhouse by Messrs. Summerscales, of Halifax. The quantities and measurements were by Messrs. Northcroft, Son & Neighbour. Mr. J. Gard has acted as clerk of works, and Mr. George J. Boyman as clerk of (electric) works.

PROPOSED SMALLPOX HOSPITAL FOR WHARFEDALE.—An inquiry was held on the 31st ult. at the Union Offices, Otley, by the West Riding Sanitary Committee, concerning the application of the Wharfedale Joint Isolation Hospital Committee for the approval of a plot of land in Cross-lane, Guiseley, as the site of a proposed small-pox hospital. The position in which the project stood was explained by Mr. C. J. Newstead, clerk to the Hospital Committee, and evidence was given by Mr. H. Chippendale, architect to the Hospital Committee, Mr. E. J. Silcock, C.E., Leeds, and others.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses :—

Lines of Frontage and Projections.

Battersea.—Retention of a portico to the gate lodge of the Wandsworth Infirmary, on the north side of St. John's Hill, Battersea (Messrs. Lansdell & Harrison for the Guardians of the Wandsworth and Clapham Union).—Consent.

Lewisham.—A porch in front of St. Margaret's, Berlin-road, Catford (Messrs. G. H. and A. Bywaters & Sons for Mr. W. Street).—Consent.

Marylebone, East.—The retention of a balcony at the first floor level in front of No. 6, Duchess-street, Portland-place, St. Marylebone (Mr. W. H. White for Mr. R. H. Tebb).—Consent.

St. George, Hanover-square.—The bringing forward of the frontage of No. 2, Hamilton-place, Mayfair, and the erection of a porch to the entrance to such building (Messrs. W. H. Romaine-Walker and Besant).—Consent.

St. George, Hanover-square.—An iron and glass shelter in front of the entrance to No. 14, Berkeley-square, St. George, Hanover-square (Mr. W. G. Horseman for Mr. L. V. Harcourt)—Consent.

Strand.—A balcony at the first-floor level in front of No. 11, St. James's-place, Westminster (Mr. J. W. Stonhold for Mr. H. M. Matheson).—Consent.

Wandsworth.—A building, with a one-story addition in front, on the west side of Garratt-lane, Wandsworth, to abut also upon Summerley-street (Mr. R. A. Hinds for the London and South-Western Bank, Ltd.).—Consent.

Lewisham.—A one-story office in front of No. 1, Albion-road, Lewisham (Mr. C. O. Robson for Mrs. J. Robson).—Refused.

St. George, Hanover-square.—Request of Messrs. Wilson & Co. for Messrs. Askew for permission to retain a projecting "canopy light" in front of No. 42, Conduit-street, St. George, Hanover-square.—Refused.

Marylebone, East.†—A projecting clock at the second floor level in front of No. 160, Oxford-street, St. Marylebone (the Standard Time Co., Ltd., for Messrs. Mappin & Webb, Ltd.).—Refused.

Chelsea.†—A portico at the entrance to Sloane Gate-mansions on the east side of D'Oyley-street, Chelsea (Mr. C. J. C. Pawley).—Refused.

Paddington, South.—Two projecting showcases on the pilasters of Nos. 43 and 45, Westbourne-grove, Bayswater (Mr. A. M. Ridge for Messrs. W. Whiteley, Ltd.).—Refused.

Paddington, South.†—Six projecting showcases on the pilasters of Nos. 147 to 159 (odd numbers only), Queen's-road, Bayswater (Mr. A. M. Ridge for Messrs. W. Whiteley, Ltd.)—Refused.

St. Pancras, East.—Buildings upon the site of Nos. 152 to 170 (even numbers only) inclusive, Euston-road, St. Pancras, with projecting piers, bay windows and oriel windows, and offices in the

forecourts (Messrs. Meaby & Webbe for the trustees of the Hearts of Oak Benefit Society).—Refused.

Width of Way.

Finsbury, East.—That the application of Messrs. N. S. Joseph, Son, & Smithem for an extension of the period within which the erection of warehouse buildings on the north side of Great Arthur-street and south side of Bayer-street, Golden-lane, was required to be completed, be granted.—Agreed.

Hoxton.—That the application of Mr. R. Peters for Mr. W. C. Wigg, for an extension of the periods within which the erection of a warehouse building at the rear of No. 97, Curtain-road, Hoxton, to abut upon Welch's-buildings, was required to be commenced and completed, be granted.—Agreed.

Width of Way and Lines of Frontage.

Southwark, West.—That the application of Mr. A. H. Ryan-Tenison for an extension of the period within which the erection of a porch and two bay-windows in front of St. Peter's Church vicarage-house, Sumner-street, Southwark, was required to be commenced, be granted.—Agreed.

Hackney, North. — A deviation from the plans approved on December 2, 1902, for the erection of a block of two-story flats on the south side of a paved footway leading from Church-path to Albion-road, Stoke Newington (Mr. A. P. Osment). — Refused.

St. George, Hanover-square.—Bay windows in front of Nos. 77 and 78, South Audley-street, St. George, Hanover-square (Messrs. E. George & Yeates for Mr. E. A. Whittuck).—Refused.

Line of Frontage, Width of Way, and Deviation from Certified Plans.

St. George, Hanover-square.—Re-erection, with bay-windows and porch, of No. 30, Charles-street, Mayfair (Mr. R. G. Hammond for Mr. J. Garlick). —Consent.

Lambeth, North.—Deviations from the plans certified by the District Surveyor so far as relates to the proposed re-erection of Nos. 130 and 132, Broadwall, Blackfriars (Mr. A. C. Forrester for Mr. A. J. Hodges).—Consent.

Line of Frontage and Construction.

Rotherhithe.—An iron gangway to connect Coles Wharf with a building on the south side of Shad Thames, Rotherhithe (Messrs. Gelder & Son for Messrs. A. & P. Keen).—Consent.

Space at Rear.

Marylebone, West.—A modification of the provisions of Section 41 of the Act with regard to open spaces about buildings, and an extension above the diagonal line, so far as relates to the proposed erection of residential flats on the north side of Marylebone-road and west side of Lisson-grove, St. Marylebone (Messrs. Gordon & Gunton).—Consent.

Formation of Streets.

St. Pancras, South.—That the time within which the new street to be named Burton-street (in continuation), to lead from Burton-street to Mabledon-place, Euston-road, St. Pancras, was required to be defined throughout by posts and rails, and thrown open to the public as a highway, be extended to two years from the 4th day of March, 1902.—Agreed.

Means of Escape at Top of High Buildings.

Strand.—Means of escape in case of fire, proposed to be provided in pursuance of Section 63 of the Act, on the sixth story of Marlborough-chambers, on the site of Nos. 70 and 71, Jermyn-street, and No. 25, Bury-street, St. James, Westminster (Mr. R. Morphew).—Consent.

Height of Buildings.

City.—A deviation from the plans consented to under Section 49 of the Act, 1894, for the erection of a building on the south side of Tallis-street, City, between Carmelite-street and John Carpenter-street, so far as relates to an alteration in the roof of such building and the erection of chimney-stacks (Mr. F. Fox).—Consent.

*** *The recommendations marked † are contrary to the views of the Local Authorities.*

BOOKS RECEIVED.

THE SCULPTURES OF THE PARTHENON. By A. S. Murray, LL.D., F.S.A. (John Murray. 21s.)

THE ANCIENT AND LOYAL CITY OF EXETER. By Beatrix Cresswell. (The Homeland Association. 6d.)

SPON'S ARCHITECTS' AND BUILDERS' POCKET-BOOK. 1903. By W. Young. Thirteenth edition, edited by Clyde Young, A.R.I.B.A. (E. & F. N. Spon. 3s. 6d.)

INTARSIA AND MARQUETRY. By F. Hamilton Jackson. (Sands & Co. 5s.)

PUBLIC PROVISIONS OF THE METROPOLIS WATER ACT, 1902. By Joseph Reeson. (Butterworth & Co. 1s.)

NOTES ON THE REPAIR OF ANCIENT BUILDINGS. Issued by the Society for the Protection of Ancient Buildings. (B. T. Batsford).

PHOTOGRAPHIC LENSES: A Simple Treatise. By Conrad Beck and Herbert Andrews. (R. & J. Beck. 1s.)

Correspondence.

THE ARTISTIC TREATMENT OF ENGINEERING WORKS.

SIR,—May I, as an habitual reader of the *Builder*, express gratitude for your efforts to revoke such wanton vandalisms as the proposed Vauxhall Bridge and the erection of lattice girder bridges at Sonning-on-Thames.

Speaking as an engineer I am certain that the greater part of the profession is sensible enough to recognise the necessity and even welcome the co-operation of the architect in such works. We should indeed be behind the times if we did not.

Is it not time some society was started for the prevention of the perpetration of architectural atrocities in public places? At present it seems nobody's business in particular, and the public never wake up till it is too late.

J. B. C.

Karachi, India, March 7.

*** The above letter is from an engineer in the Public Works Department of India. It manifests a spirit certainly very different from that of a good many engineers practising in this country. It is a curious coincidence that at the very time that letter was being written in India a society such as the writer indicates was actually in course of formation in London, and is now in existence as the "Architectural Vigilance Society," of which the Editor of this journal, who was partly instrumental in the formation of the Society, is Honorary Secretary.—ED.

THE NORTH ELMHAM RUIN.

SIR,—The paper on North Elmham in the *Builder* of March 14 directs attention to a monument the plan of which offers some interesting features. The earthwork or "burh" in which it is still partly buried is to all appearance of earlier date than the structure, and as the "burh" is not likely to be later than early Norman times, the structure is probably Saxon, though it exhibits none of the distinctive Saxon peculiarities. This applies only to the main lines of the fabric, for within and about it there is a good deal of mediæval work that is obviously of later date. My own reading of the existing remains differs somewhat from that of the writer of the paper, in that I regard the whole of the early parts as of one date, probably the latter part of the tenth century. The cross-wall that bounds the existing transept towards the west seems to me contemporary with the external walls to north and south, and in this case the two chapels to the west of the transept, flanking the nave, will be parts of the original scheme. The treatment of the southern face of the southern wall west of the transept favours this view. The chapels have of course been a good deal knocked about, and altered by the thickening of their walls and in other ways. The western adjunct, obviously the lower part of a tower, with its projecting stair turret, is also to all appearance of the same date with the nave. If this be so, then, so far as the western part of the structure is concerned, it would come into line with some late Saxon and early Norman churches, in which there is a western division the same external width as the nave, but with thicker walls, that probably carried a tower. The Saxon Daglingworth and Diddlebury, the early Norman Hooton Pagnell, near Doncaster, and the ruin at South Elmham, Suffolk, that seems of Norman character, may be mentioned in this connexion. On the other hand, the eastern termination at North Elmham, which is in the "crux commissa" form, might in itself be earlier than the tenth century. The building would repay further careful examination, and your readers owe a debt of gratitude to the writer of the paper for introducing to their notice a structure of such importance and interest.

G. BALDWIN BROWN.

PROPOSED QUANTITY SURVEYORS' ASSOCIATION.

SIR,—Mr. Wood has issued his programme of the objects of this association. It is vague, and surveyors are, perhaps, restraining their eagerness to join it until they know what methods he will adopt to carry out his aims.

In regard to the first article:—"To uphold the dignity and importance of the profession and to provide the means for quantity surveyors to meet and discuss subjects of interest and to settle cases of difficulty," I should be glad to know how this upholding is to be done. One way would be to establish a difficult examination, but if it is more difficult than that of the Surveyors' Institution, candidates will be few and will prefer the older institution.

An element of exclusiveness would be furnished by the payment of a five guinea entrance fee, but few people will know this, and if they do, may doubt whether it is a proof of wisdom to pay so much for so small a return.

"An efficient means for discussion of subjects of interest and settling cases of difficulty" exists already.

Two of Mr. Wood's proposals convey innuendo.

No. 1 implies that the dignity and importance of quantity surveyors is not at present upheld. Some people think that the quantity surveyor already gives himself airs in that direction which are not graces.

2. That their efficiency and fair dealing require guarantees. How will this Association guarantee efficiency? It will not be able to afford to be critical of the quality of its members. A proportion of them will be men who are ineligible for the Surveyors' Institution or have been unable to pass its examination. Secession from the Surveyors' Institution is not worth consideration. I believe I am right in saying that the majority of quantity surveyors all over the kingdom hold the balance of justice between the building owner and the builder.

Moreover, the Association will only accept recognised quantity surveyors who do not require their dignity and importance upheld, and the wicked men who cheat the builder with short quantities or oppress him in the settlement of variations, at the same time charging absurdly high rates for very poor work, will shun the "fierce light" of the new Association.

3. Is an occult allusion to the influence of this Association as an additional means of "ensuring the confidence of architects." The conditions of ensuring this are well known; they are character, capacity, complete knowledge of one's business, and assiduous attention to it and to the employer. The architect who sees these qualities in the man he employs will not trouble himself to inquire of what association he is a member, or whether he belongs to one at all.

4. Uniformity of practice.

This has been a subject of occasional speculation for years. Members of local associations in Manchester, Edinburgh, Glasgow, and perhaps some others, are fairly uniform in their practice, but confine themselves to the methods of their district, and no doubt the builders of the particular district understand and like it.

Judging from a passage in Mr. Wood's letter of January 31, "at present no wise London architect would employ a south country quantity surveyor for any work he had in the North or Midlands unless his client had unlimited means," he will inaugurate uniformity by imposing upon us the system current at Leeds. Any attempt to establish provincial methods, instead of a system considerably broader than London practice, is not reasonable.

For the establishment of uniformity, the hour and the man have not yet come. The resolution of the first meeting of this proposed Association is perfectly Arcadian in its simplicity:—

"That in the formation of the Association, the value and importance of the Surveyors' Institution be fully respected and recognised, and that that body shall be courteously approached to assist in the registration of the Association."

The whole document of proposal is an imputation upon the constitution and efficiency of the Surveyors' Institution. It in effect says—"You do not uphold the dignity and importance of quantity surveyors; you do not meet and discuss subjects of interest and settle cases of difficulty; your membership is not a guarantee of efficiency and fair dealing nor a means of winning the confidence of architects." Yet, despite these assertions, Mr. Wood talks about recognising value and importance.

> "Perhaps it was well to dissemble your love,
> But why did you kick me downstairs?"

To my fellow surveyors I venture (with deference) to offer advice.

The Surveyors' Institution is established and powerful. It does not profess to do impracticable things, but it does very good work for the profession. When required it can and will exert a powerful influence on the polity of the quantity surveyor. One organisation representative of the whole profession is the ideal which all who are interested in the work and prospects of the surveyor should endeavour to realise. Anything which will tend to weaken its influence or divide its counsels is to be deprecated. Those men who do not at present belong to the Surveyors' Institution will contribute valuable help in the evolution of such of Mr. Wood's proposals as the Institution may deem it expedient to advance.

JOHN LEANING.

THE LECTURE ON FIRE PROTECTION BEFORE THE SOCIETY OF ARTS.

SIR,—I was very much surprised, as probably you were, by the reading of the Prize Essay, which should really have been entitled "How to Maintain the Fire Brigade at Little Pedlington."

The essay chiefly consisted of extracts from and comments on a Report of the Committee of the House of Commons. The author must have heard of a small village on the Thames called London, where more fires occur in a year than in the whole of England south of the Trent.

The various Acts and Regulations at present in force in London should have received attention, then suggestions should have been made for further legislation, and finally a proposal for a general Act on similar lines to apply to the provinces.

It was a dull commentary on almost obsolete Acts applying to small towns; there were no suggestions of a practical nature, and nothing that anybody could carry away with pleasure and profit.

The essay placed second appeared the best, while the third went off to Glasgow, again ignoring London. I went for bread, and received a stone. It would be difficult to imagine a more wordy talking round the subject, only the remarks of Mr. E. O. Sachs being to the point and practical.

It is the duty of the Local Authority to provide fire-engines, &c., for the purpose of saving life, and to make such rules as will ensure proper exits in public buildings and factories. Why should the cost be laid on the insurance companies, who must, in self-defence, greatly increase the amounts of premiums. Better throw some expense on the rates, which all pay, and all receive the benefit of protection from fire.

I suggest a Building Act for London, including the present Building Act, the Regulations for Theatres and Factories, and an Act on similar lines, so far as the conditions apply, for the whole of the country. Architects would then know what they had to provide for, and owners would know the extent of their liability. The subject is great and important, and I consider the laudable attempt of the Society of Arts has produced very poor results. The opinions of your readers will be interesting.

"FIREPROOF."

IS A HOTEL A "DOMESTIC BUILDING?"

SIR,—Can you inform me (or any of your readers) through your paper whether a "Public Building"—for example, a hotel having sleeping accommodation for over a hundred persons—can be also considered a "domestic building" or "dwelling house" under the London Building Act, 1894; and whether the above example would have to conform to Sections 41 and 43 of the London Building Act, 1894? JOHN P. BISHOP.

*** Our correspondent will see by Section 27 of the London Building Act that a hotel is a public building "where such building extends to more than two hundred and fifty thousand cubic feet or [is used] as sleeping accommodation for more than one hundred persons." Section 26 states that a "domestic building" includes a dwelling-house "and any other building not being a public building or of the warehouse class." A hotel below the limit of contents and accommodation defined in Section 27 is therefore a "domestic building" or "dwelling-house." It appears to us, however, that where it exceeds that limit it is still, by implication, a "dwelling-house" (since people sleep in it), but with the added responsibilities attaching to a "public building." The wording of the Act, it is true, is not very precise on this point; but no other conclusion could be rationally deduced from the intent of the Act.—ED.

OBITUARY.

MR. W. HUBBARD.—We have to record the death recently, at the age of seventy-nine, of Mr. M. William Hubbard, who for many years carried on the business of a builder and contractor on a large scale at East Dereham Norfolk, though he had for the last two years retired from business. Mr. Hubbard had erected or rebuilt, during the last fifty years, more Norfolk churches than any other builder, working under many of the best known London and provincial architects of the day. The list of churches on which he was employed for operations of greater or less magnitude mounts up to fifty-nine, and among the architects' names are those of G. E. Street, E. B. Lamb, Raphael Brandon, and others well known. Mr. Hubbard also executed large additions to Didlington Hall under Mr. Norman Shaw, and built the Bank, Corn Hall, and other buildings at East Dereham, besides much various work in other parts of the county.

GENERAL BUILDING NEWS.

NEW CHURCH AT MILE END.—On Wednesday, March 25, the new Roman Catholic church, dedicated to the Guardian Angels, was opened. The church, which occupies a prominent position in the Mile End-road, takes the place of what was formerly a Nonconformist chapel, which, after being used as a Roman Catholic church for a short while, was condemned as insecure by the London County Council. The new church is designed in the Perpendicular style of Gothic architecture, and externally is built of red brick, with Ancaster stone for the tracery windows, &c. The site only admitted of a very limited length, but for purposes of accommodation this is compensated for in width. The plan consists of a nave 38 ft. wide, one wide aisle and one narrow processional aisle, a chancel 32 ft. in depth, with two large side chapels, over one of which is the organ place. Owing to the limited amount of space, the sacristies are beneath the chancel, while under the rest of the church is a large crypt, or hall, for drilling and other parochial purposes. The internal height of the church is 57 ft. High up in the chancel arch is a carved and decorated rood beam, and beneath is a plain stone communion-rail with wrought-iron gates, which, together with the other wrought metal work throughout the building, have been executed by Mr. Bainbridge Reynolds. The chancel itself is completely furnished with fittings executed by Messrs. Earp & Hobbs. The high altar has an open carved wood reredos and baldachino, the whole of which will be decorated later, and over it is a painted window executed by Mr. Westlake, and given by the Duke of Norfolk in memory of his sister, Lady Margaret Howard. The choir is accommodated in stalls, with open parclose screens at the back separating the chancel from the side chapels. To afford additional accommodation, a large gallery is provided at the end of the church. All the woodwork, together with that of the whole of the roofs, is of unvarnished pitch pine. Accommodation is provided for about 500 persons, and the cost of the building has been about 11,000*l*. The heating and ventilation of the church have been arranged and carried out by Mr. J. Jeffreys, of Westminster, the electric lighting by Messrs. Seth Brothers, of Shepherd's Bush, and the contractors for the work are Messrs. James Smith & Sons, Ltd., of Norwood. The architect is Mr. F. A. Walters, of Westminster.

ROMAN CATHOLIC CHURCH, MUSSELBURGH, EDINBURGH.—It has been decided by the Roman Catholic congregation in Musselburgh to erect a church more suited to their requirements than the building possessed by them at present. Designs have been accepted, which are the work of Mr. A. E. Purdie, architect, Canterbury. Of early Gothic architecture, the new church will be cruciform, having a nave measuring 98 ft. long by 34 ft. broad, transepts, chancel, organ chamber, baptistry and two sacristies, which will provide direct communication with the presbytery or priest's house, which is also to be erected. In memory of the ancient shrine and chapel destroyed by the townsfolk of Musselburgh in Reformation times, the building will be styled the Church of our Lady of of Loretto, and will be erected on the site of the present chapel in Wonder-street, Musselburgh.

PRIMITIVE METHODIST CHURCH, BARWELL, LEICESTERSHIRE.—A new Methodist church, situate on the Shilton-road, Leicester, has just been opened. The contractor for the church was Mr. Bennett, of Shilton, Mr. Harper, of Nottingham, being the architect. The church will accommodate about 500 persons, and the cost has been about 2,000*l*.

PROPOSED ALTERATIONS, ST. IVES CHURCH, CORNWALL.—It is proposed to carry out alterations on this building from the plans of the architect, Mr. Stebbings. The alterations consist of taking up the present tiles in the aisles, sinking the floor 9 in., concreting the floor over the old flagstones (which are at present buried beneath the tiles), to reseat the church (the flooring under the seats to be of block tiling); to fix adequate ventilating and heating apparatus, to take down the present eastern wall of the church and extend it 10 ft. towards the sea, the wall to be rebuilt precisely as at present, stone for stone; to place the organ in its original position, facing westwards, but in the extension to close up the present south entrance and open the old doorway underneath the sun-dial. By the extension the vestry will be considerably enlarged.

BURY PARK CONGREGATIONAL CHURCH, LUTON, BEDS.—The foundation-stone of this church was laid on the 31st ult. The accommodation provided is as follows:—468 adults on ground floor and sixty-five in end gallery, total 533, or a mixed congregation of about 610 persons, with possible future galleries in transepts and over vestries for 160 more sittings, or a final total of over 800 sittings in a mixed congregation. A church parlour, vestries, and other conveniences are provided. The buildings are to be faced with red brick, with Costessey brick dressings. The joinery internally will be stained transparent green and wax polished, and there will be red granite columns supporting four crossing arches. The contract is let to Messrs. T. & E. Neville, of Luton; and amounts to 4,429*l*. The architects are Messrs. George Baines & R. Palmer Baines, Clement's-inn, Strand, London, W.C.

PRESBYTERIAN CHURCH, MUSWELL HILL.—The opening service of this church was held on Friday, the 27th inst. The building is of the Perpendicular period of Gothic architecture, and is faced externally with whole white flints, in combination with pressed red facing bricks and red terra-cotta dressings. A square tower, terminated by a spirelet covered with copper, forms a prominent feature at the angle of the block, the site being at the corner of Muswell Hill-road and Princes-avenue. The plan approximates in form to a Greek cross. There is a gallery at the front end over the entrance lobbies, and a choir gallery, slightly raised above the floor, behind the pulpit. An arch behind the pulpit opens into an organ chamber; a specially-designed organ is to be placed here in a few months. Four grey granite columns, with stone bases and carved capitals, support the four main arches which carry the roof. The ceiling internally is vaulted in wood. The windows are filled with leaded lights. The building is lighted by a central gas pendant to assist ventilation, and four oxydised-silver electroliers, with other minor pendants and brackets. A self-acting air-pump ventilator and flèche crown the roof at the crossing. Heating is by low-pressure hot-water pipes and radiators. The interior is finished with sand-faced stucco. The seating is circular on plan, with panelled sloping backs, shaped ends, book racks, &c., and all radiating from the pulpit, which has a platform in front of it. Four emergency exits, with inner lobbies, are provided at the four corners, and fireproof stairs up to gallery. All internal joinery and seating is in Orham wood, wax polished. The church seats 730. Messrs. George Baines and R. Palmer Baines are the architects; and Messrs. W. Johnson & Co., Wandsworth Common, the builders.

COTTAGE HOSPITAL, DUNFERMLINE.—Plans for alterations and extensions, Dunfermline Cottage Hospital, have been passed. The architects are Messrs. Sydney Mitchell & Wilson. The alterations and extensions on the buildings will cost about 3,500*l*., and accommodation will be provided for forty-five beds.

SCHOOL, ABERDEEN.—A new school is to be erected in Frederick-street by the Aberdeen School Board. The general plan of the new school may be described as a combination of the "corridor" and "central hall" plans. The total length of the new building will be 154 ft. 6 in., and the width 69 ft. The two entrances are the girls' and the boys' respectively, which lead into the entrance halls, the headmaster's room being adjacent to the one and the infant mistress's room to the other. The infants' entrance is placed at the west end of the building, where their cloakroom accommodation is also provided. There are five classrooms for infants on the ground floor containing accommodation in all for 316 scholars. Towards the front of the ground floor is situated the central hall and gymnasium, which measures 59 ft by 32 ft. On the first floor there are situated seven classrooms, with cloakrooms for boys and girls respectively and teachers' rooms. On the second floor there are six classrooms, and also a cookery room; there is also a manual instruction room and a wood store. In all, the school has accommodation for 1,100 pupils—316 infants and 784 boys and girls—seniors and juniors. In order to meet the necessity for more playground space than the limited size of the site could provide, the Board has adopted plans showing a flat roof playground. Instead of the ordinary wood framed and slated roof the whole area of the top of the building will be laid with concrete upon steel beams and joists, the concrete being ultimately covered with Limmer asphalt 1 in. thick. In this way the playground space will be increased by 896 square yards. The whole of the roof playground will be enclosed by parapet walls, 9 ft. high at the lowest parts. The wall dadoes of the corridors and staircases will be lined with glazed tiles 4 ft. high. The school will be lighted by electricity, heated by steam from a Cornish boiler in the basement. The total cost of the school, exclusive of heating, ventilating, desks, and furnishings, will be 12,200*l*. The school has been planned and designed by the Board's architect and master of works, Mr. J. A. O. Allan.

FACTORY, GREENBANK, BRISTOL.—New works for Messrs. H. J. Packer & Co. have been erected at Greenbank. The buildings consist of three blocks, over 300 ft. long each, and containing over 140,000 ft. of floor space, and connected by glazed iron roofs, the centre one containing the engines, boilers, and machinery. The walls of all the workrooms are lined with light green glazed bricks, and the floors laid with hard wood. There are two dining-halls, each affording accommodation for 400 work-people, which are treated in a similar manner. The buildings were erected by Messrs. William Cowlin & Son, of Bristol, from the plans of Mr. Fred Shove.

COUNCIL OFFICES, EBBW VALE.—Some time ago the Ebbw Vale District Council purchased from the Ebbw Vale Steel, Iron, & Coal Co. the whole of their buildings near the old Drill-hall, formerly used as workshop and offices of the coal and mine department. These have been converted into a council-room, suite of offices, fire-station, stable, and the necessary workshops, at a cost of 2,700*l*. The contract was carried out by Messrs. S. T. Davies & Sons, builders, Ebbw Vale, to plans drawn by the surveyor, Mr. J. T. Thomas, and his assistant, Mr. Rosser Davies.

WORKMEN'S HOSTEL AND CLUB, LIVERPOOL.—A Workmen's Home and Club is being erected at Liverpool out of the David Lewis Trust money, with, as one of the special features, a public hall. The site is that of the old St. James's Market, in Great George-place. The main elevation extends 174 ft., and the side frontage in Nile-street 146 ft. The site covers 220 ft. by 176 ft. The facing of the chief outer walls is of a special brick and terra-cotta, with green roof slates. The public hall, which occupies the centre, will seat over 800 persons, and is being completed with stage and green-rooms, there being a separate stage entrance from the rear, in Rathbone-street. The Social Club has a billiard-room 67 ft. by 30 ft., two committee-rooms, three

social-rooms, and a special clubroom for females. The cubicles number 380, and there is a promenade roof. The building has been erected under the superintendence of the architect, Mr. J. Francis Doyle, of Liverpool.

IMPROVEMENT AND ENLARGEMENT OF WORKHOUSE, STOWMARKET.—A meeting of the Stow Board of Guardians was recently held at the Board Room, Stowmarket, when plans by Mr. John S. Corder, architect, of Ipswich, were considered for the proposed alterations to the workhouse.

RUNCORN COTTAGE HOSPITAL.—On the 28th ult. the Runcorn Cottage Hospital was opened by Mr. W. J. Crossley, Manchester. The hospital has been constructed after the style of the old Cheshire buildings, and is situated at Higher Runcorn. It stands on a portion of $2\frac{3}{4}$ acres of land, and faces the south. On the ground floor there are three wards with accommodation for ten beds. The hall, with the addition of a window, becomes a dayroom for convalescent patients, and there is also a small operating-room lighted from the top and sides. On the first floor, which is reached by a staircase from the hall, is situated the matron's room, and there are also a kitchen, pantry, bathroom, &c. On the top floor there are two bedrooms. Mr. Wilding, Surveyor to the District Council, has conducted the operations as hon. architect.

HOUSING SCHEME, EAST HAM.—The East Ham District Council is carrying out a scheme which embraces the erection of fully 540 separate tenements, which, with land charges, formation of roads, and contingencies, will, it is estimated, involve a total cost of something like 120,000*l*. So far, 212 of these tenements have been erected for about 55,916*l*.—a sum well within the estimate—and on Tuesday last the scheme was formally inaugurated by Sir William Collins. Mr. A. H. Campbell is the Council's Engineer and Surveyor.

PUBLIC SCHOOL, BIRKENHEAD.—The foundation stone has just been laid of new higher elementary schools for the Birkenhead School Board. The new schools are being erected in the centre of the town on a site covering 2,870 sq. yards, fronting Conway-street, and adjacent to the General Post Office. The buildings provide accommodation for 350 boys and 350 girls, each school being planned in a separate block, connected by means of general rooms common to both departments. The boys' school fronts Conway-street, and the girls' school faces Burlington-street, each school having two entrances from main streets and two from playgrounds. The boys' school consists of ten general classrooms, all grouped around a central hall; and, in addition, rooms for manual instruction, drawing, chemical and physical laboratories, and the usual cloakroom and teachers' accommodation. The girls' school consists of similar general accommodation, and also rooms for cookery, laundry, drawing, chemical and physical laboratories, &c, a lecture-room and dining-room being common to both schools. The general classrooms in both schools are kept away from main streets to ensure quiet and good light. Large open and covered playgrounds are provided at the rear. A caretaker's house is arranged on the top floor. The buildings are three stories in height, the design being Renaissance in character, freely treated. The elevations to main streets will be faced with red Ruabon bricks and buff terra-cotta, the roofs being covered with green Westmoreland slates. The floors and staircases will be of fireproof construction. The general contract is being carried out by Mr. James Merritt, of Birkenhead, for the sum of about 22,000*l*., from the designs and under the superintendence of Mr. T. W. Cubbon, architect, of Birkenhead, Mr. Henry Helms acting as clerk of works.

SANITARY AND ENGINEERING NEWS.

SOUTH LANCASHIRE TRAMWAY CO.—This tramway company opened their lines between Liverpool and Bolton on March 30. The main generating-stations and car-sheds are at Atherton, St. Helens, and Prescot, sub-stations and car-sheds at Hindley, and switch and waiting-room at Huyton. The general contractors for the buildings are Messrs. Woods, of Bolton; E. Wood, of Salford, and E F. Blakeley, of Liverpool, for the ironwork; Messrs. Diespeker for terrazzo floors; and Messrs. Mellowes for the patent glazing. The whole of the work has been carried out from the designs and under the superintendence of Mr. Huon A. Matear, architect, of Liverpool. Messrs. Kinsaid, Waller, Manville, & Dawson are the consulting engineers. The Company was formed in 1900 for the purpose of connecting up the tramway systems of the more important towns in South Lancashire by means of electric tramways through the intervening towns and districts. The latter were practically isolated, and had long felt the need of an up-to-date system of intercommunication. The railway facilities were very limited, and the only other means of intercommunication was a system of one-horse omnibuses. The present scheme will bring all these districts into touch both with one another and with the great cities at either end of the system. The Liverpool and Prescot Light Railway, which is in the same hands, was opened in June, 1902. The first section of the South Lancashire Co.'s lines, ten miles in length, was opened for traffic on October 20, 1902, being operated from the Company's power-station at Atherton. This section establishes direct communication between Lowton, Leigh, Atherton, Tyldesley, and Bolton. The line from Atherton to Hindley was opened on February 7 of this year. The link between Hindley and Haydock is now completed, and brings Liverpool into direct tramway connexion with Bolton and Wigan through the intervening system of St. Helens. The next constructional scheme provides for the extension of the tramway system from Bolton to Salford, with a second line from Salford to Leigh and Lowton to St. Helens. In order to realise the magnitude of this undertaking, it is only necessary to state that the Company have Parliamentary powers under their various Acts to construct about 115 miles of tramway, which will give a double connexion between Liverpool and Manchester, and link together the following towns and districts:—Bolton, Wigan, St. Helens, Atherton, Tyldesley, Leigh, Lowton, Newton, Earlstown, Prescot, Rainhill, Knotty Ash, Warrington, Astley, Boothstown, Worsley, Eccles, Patricroft, Swinton, Salford, Walkden, Huyton, Hindley, Westhoughton, Abram, Golborne, Ashton-in-Makerfield, Haydock, Rochdale, &c. Altogether 550 miles of tramways will thus be interconnected, serving a population of 5,000,000.

MISCELLANEOUS.

GOOD FRIDAY WEEK.—In consequence of the Easter Holidays, next week we go to press a day earlier than usual. All communications for the Editor must reach him by *first post on Wednesday morning*, except lists of tenders, which will be received up to 10 a.m. of the same day.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Frederick Wheeler & Lodge, architects, of Horsham and 6, Staple Inn, London, have dissolved partnership. The practice will be carried on by Mr. Frederick Wheeler solely, at both addresses.——Mr. Bertram Blount announces that, owing to the death of his late partner, Mr. W. Harry Stanger, the firm of Stanger & Blount is dissolved. The business of the late firm is being temporarily conducted at 2, Broadway, Westminster, but at an early date Mr. Blount will remove to other premises in Westminster.

THE DIOCESE OF CANTERBURY.—Our reference in a "Note" last week ("The Old Barbican, Sandwich") to Mr. Jennings as recently appointed Diocesan Architect to the Diocese of Canterbury appears to have been a mistake, though it has been so stated in the *Times* and other papers. Mr. Jennings has been appointed Diocesan Surveyor, in succession to Mr. Philip Day. Mr. Caröe holds the post of Diocesan Architect.

LANCASTER MASTER BUILDERS' ASSOCIATION.—The fifth annual meeting of the Lancaster Master Builders' Association was held recently, Councillor G. Wright (President) presiding. The Report showed a membership of seventy-eight, an increase of five. The differences between the plasterers and their employers were, it was stated, put to arbitration, Colonel R. J. Hall being chosen as arbitrator. His decision was in favour of the employers. Relations between the Association and the men's local societies continue satisfactory. It had been decided to have one week holiday in August each year, and to curtail the usual holidays at Easter, Whitsuntide, and Christmas. The accounts showed an income of 120*l*., and a balance in hand of 57*l*., against 54*l*. Mr. T. Mawson was elected President; Mr. H. Walbrick, Mr. G. Wright, and Mr. R. P. Wilson, Vice-Presidents; and Mr. D. S. Cross, Treasurer.

CAMBRIAN ARCHÆOLOGICAL ASSOCIATION.—The Cambrian Archæological Association has decided to hold its next annual meetings at Portmadoc, the environs of which are invested with exceptional interest to the antiquarian, there being the attractions of Beddgelert, Harlech Castle, Criccieth Castle, several very ancient churches, and a plethora of crominchan, tumuli, inscribed stones, and other Ireolithic remains. Mr. John E. Greaves, the Lord-Lieutenant of Carnarvonshire, has accepted the office of Chairman to the Reception Committee; and Mr. Thomas E. Morris, of the North Wales Circuit, and Mr. Charles E. Breeze have undertaken the duties of local secretaries. At the first meeting of the Reception Committee at Portmadoc on Friday, Mr. Greaves presiding, it was stated that the Association, which purposes making its visit in the third week in August, last visited the Vale of Madoc in 1868. The districts it was now proposed to inspect were Penmorfa, Llanystumdwy, and Criccieth on the first day; Harlech and Llanfair (the Roman steps), the second day; Treceiri, where excavations are now proceeding, the third day; and Beddgelert on the fourth and last day. The arrangements also provide that the President, Mr. R. H. Wood, of Rugby and Trawsfynydd, will deliver his inaugural address on the first night, and at the subsequent public meetings or during the excursions papers will be read probably by Professor Anwyl, Professor J. E. Lloyd, Professor John Rhys, Professor Kuno-Meyer, and Professor Boyd-Dawkins.—*Liverpool Courier.*

EARLY SCOTTISH BUILDINGS.—The second of the present series of the Rhind Lectures in Archæology was given on the 25th ult. in the National Portrait Gallery, Queen-street, Edinburgh, by Mr. Thomas Ross, architect, the subject being "The Brochs, Underground Houses, and Roman Architecture." The brochs, Mr. Ross said, were the most outstanding and distinctive of all the buildings ever erected in Scotland, and they had no parallel among the buildings of defence anywhere in the British Isles. They were of great size and existed in great numbers, and their distribution throughout Scotland was remarkable, while the total oblivion in which they were enveloped until about the middle of last century was almost incredible. Yet they knew that they existed to the number of about 400 in the district of Scotland beyond Loch Ness. They were round towers of about 30 ft. internal diameter, with walls about 15 ft. thick, having an entrance on the ground floor and no other opening to the exterior. The tower contained a few chambers on the ground floor, entering from the courtyard, which was open to the sky. There was a series of galleries all round in the upper floors, which were reached by a continuous stair in the centre of the wall. The buildings were in that part of Scotland which was held by the Norsemen, and were probably built between the departure of the Romans and the eighth and ninth century by the people as a protection against the Northern pirates. The Roman buildings, of course, could not be regarded as pre-historic in the same sense, but still they had no specific information of the erection of any individual building, except those of purely military works. Excavations conducted in recent years had resulted in disclosing buildings displaying considerable architectural merit. The building which stood on the banks of the river Carron, known as "Arthur's Oon," taken down in the eighteenth century, was considered by antiquarians of that day to be the grandest Roman building in the country, and fortunately drawings of it had been preserved. It was circular in shape, with a dome, and lighted from the top, and was of small dimensions. Although they might never expect to find any building in such a state of completion as "Arthur's Oon," large quantities of architectural details had been found. Mr. Ross mentioned that the excavations now being undertaken along the Antonine wall were being looked forward to with considerable interest.

SCHOOL OF ARCHITECTURE AND APPLIED ART, UNIVERSITY COLLEGE, LIVERPOOL.—The special art scholarship of 60*l*. given by the City Council through the Technical Instruction Committee has been awarded this year to Miss C. E. Martin, of the School of Architecture and Applied Art, University College. The scholarship is tenable for one year at London or some art centre on the Continent.

SHEFFIELD MASTER BUILDERS' ASSOCIATION.—The annual dinner of this Association was held on the 26th ult. at the Building Trades' Exchange, Cross Burgess-street. There were about seventy guests. Mr. A. J. Forsdike (President) occupied the chair. After the loyal toasts, Mr. J. Biggin proposed "The Corporation, City, and Trade of Sheffield." He condemned the Works Construction Department, which, he said, it was impossible to work to the advantage of the ratepayers. Mr. Robert Jackson, in responding, spoke of the success of the municipal undertakings. He believed that such things as water and electric light should be supplied by the Corporation, but at the same time it was dangerous to trespass too much on the enterprises of private traders engaged in those and other directions. Mr J. Longden further responded. He should not object to the Works Construction Committee if it competed for work the same as private firms. All Corporation work should be let by contract, and it would be done cheaper than it was at present. The Corporation should not interfere with house building, unless public enterprise failed to supply sufficient accommodation. He denied that the Corporation could put up buildings as reasonably as builders who had had experience all their lives The Corporation made mistakes, and ratepayers had to pay for them. Mr. W. G. England gave "The National Association and the Yorkshire Federation." Mr. J. Dawson, in reply, said the National Association had done good work in the past, and was now doing still better work. It was on a broader, firmer, and more business-like foundation than ever. In all towns there was a kindlier feeling between builders themselves, and between builders and architects, than was the case a few years ago. He eulogised the work of the Yorkshire Federation in settling trade disputes. The other toasts were "Architects and Surveyors," proposed by Mr. H. H. Hodkin, and responded to by Mr. Edward Holmes; "The Sheffield Master Builders' Association," given by Mr. E. M. Gibbs, and acknowledged by the President, who congratulated those present on the prosperous condition of the society; and "The Visitors," submitted by Mr. J. D. Cook, and replied to by Messrs. D. R. Snowden, J. J. Parker, and J. R. Wheatley.

COURT OF COMMON COUNCIL.—The usual Court of Common Council was held in the Guildhall on Thursday last week. On the recommendation of the Streets Committee it was decided that the contracts with the Limmer Asphalt Company for maintaining the pavements of the undermentioned streets be extended as follows:—Asphalt carriageways: Warwick-lane, for five years at 6d. per yard per annum, an increase of 3d. per yard super per annum on the existing contract; Giltspur-street, for five years at 9d. per yard per annum, an increase of 6d. per yard super per

annum on the existing contract; Hayne-street, Ave Maria-lane, and Amen Corner, for five years at 6d. per yard super per annum; Windmill-court, Primrose-street, Falcon-street, and Falcon-square, for five years at 3d. per yard super per annum. Asphalt footways: Tokenhouse-yard, for five years at 9d. per yard super per annum; Lombard-street, for five years at 6d. per yard super per annum; and Cannon-street, for ten years at 4d. per yard super per annum. On the recommendation of the same Committee it was decided to construct an underground convenience for men and women on the site of the existing aboveground urinal at the southern end of St. Martin's-le-Grand, at an estimated cost of 4,700*l.* On the recommendation of the Sanitary Committee it was agreed to appoint the Chairman of the Committee, Mr. R. W. Edwards, and the Medical Officer of Health, Dr. W. Collingridge, as delegates to represent the Corporation, as the Sanitary Authority for the City of London, at the Annual Congress and Exhibition of the Sanitary Institute, to be held at Bradford from July 7 to 11.

NORWICH MASTER BUILDERS' ASSOCIATION.—The annual dinner of the Norwich and District Master Builders' Association was held recently at the Maid's Head Hotel. The chair was taken by the President (Mr. James S. Smith), who was faced by the Vice-President (Mr. John Youngs). The usual loyal and patriotic toasts having been honoured, the President proposed "The Mayor, Sheriff, and Corporation of Norwich," in the course of which he incidentally passed a high encomium upon the City Engineer and the whole of the engineering department. Touching on the housing question, he said that if the Corporation wished to try their 'prentice hand at building cottages, by all means let them do so; but on no account let them fall into the error of building flats, for which there was no demand in Norwich. The Mayor responded, referring to the importance of imparting some ornamentation to all buildings, however humble. The Sheriff also replied. Mr. G. E. Hawes, in proposing "The Architects and Surveyors," paid a tribute to the memory of John Bond Pearce, who for over thirty years had practised in Norwich. He greatly missed Mr. Pearce's genial face and commanding figure, and he was sure that all the builders of Norwich profoundly sympathised with the widow and family. The toast was acknowledged by Mr. E. T. Boardman and Mr. A. C. Havers. The other toasts on the list were "The Merchants of Norwich," proposed by Mr. W. Stacey Daws and acknowledged by Mr. C. Cunnell and Mr. R. Jewson; "The Norwich and District Master Builders' Association," proposed by Mr. E. Reeve and responded to by the President; and "The Visitors," proposed by Mr. B. E. Scarles.

THE LEEDS SCHOOL OF ART.—Last Saturday afternoon the Building Construction classes in connexion with the Leeds School of Art visited the new market hall and shops now in course of erection in Vicar-lane for the Leeds Corporation. The classes, which number altogether 176 students, assembled at the markets at 2.30, and were conducted over the building by Mr. James Neill (teacher). Owing to the courtesy of the architects, Messrs. Leeming & Leeming, the students were enabled to inspect the working drawings, and were shown all the practical portions of building construction which appeal most to these students, who are chiefly drawn from the architectural profession and the different building trades in the city. The details of construction, which on this extensive range of buildings are very numerous, were fully explained by Mr. Neill.

CAPITAL AND LABOUR.

BRICKLAYERS' WAGES, LEIGH, LANCASHIRE.—The Leigh, Atherton, and Tyldesley Master Builders' Association met recently to consider the application of the operative bricklayers for an increase of wages from 9½d. to 10d. per hour, and for a revision of the working hours. It was resolved to reduce the hours in winter so that work shall take place only between light and dark, but to refuse any advance in wages, on the ground that the state of trade does not warrant it.

PAINTERS' STRIKE AT PRESTON.—Operative painters of Preston struck work on Wednesday in consequence of the masters refusing to advance wages from 8d. to 9d. per hour. During last year, when trade was good, the masters conceded an extra halfpenny, but subsequently served notice upon the men intimating that they would revert to the old rate at the end of six months. This reduction the men accepted, but on the expiration of the term served notice on the masters for an increase of one penny, making the rate 9d. per hour. The masters declare their utter inability to pay the advance, having regard to the present state of trade.—*Daily News.*

THREATENED STRIKE OF ST. HELENS CARPENTERS.—A private meeting of the St. Helens branches of the General Union of Carpenters and Joiners and the Amalgamated Union of Carpenters and Joiners was held at the Sefton Arms, Baldwin-street, St. Helens, recently. The meeting was convened, it is said, to take into consideration the action of certain master-builders of the town. A short time ago three joiners in the employ of a certain firm refused to fix up foreign-made window sashes, and for this they were dismissed. They found employment elsewhere, but it is alleged by the Carpenters' and Joiners' Associations that their new employer on learning of their action in their last employment also dismissed them. The matter was fully discussed for upwards of three hours, it having been contended by certain members of the Association that the other society men in the same shop should have "struck" at their dismissal. Eventually it was decided to suspend any action in the matter pending communication with the master-builders with regard to the matter, as a result of which it is hoped there will be an amicable settlement.—*Liverpool Courier.*

LEGAL.

ACTION BY AN ARCHITECT.

THE case of Adams *v.* Kynochs, Ltd., came before Mr. Justice Wright and a special jury in the King's Bench Division last week. It was an action by the plaintiff, Mr. Stephen Isaac Adams, an architect, to recover from the defendants 299*l.* 14s. for fees and commission.

It appeared that in 1898 the defendants, wishing to erect a hotel at a village called Kynochstown, in Canvey Island, plaintiff was called in to prepare plans of the proposed building to place before the Licensing Justices. The plans were prepared, and a provisional licence granted, it being stated at the time that it was intended to erect a building costing at least 5,000*l.* The plaintiff claimed 25*l.* for the preparation of the plans, and a further fee of 2*l.* for his attendances before the Licensing Justices. Subsequently the defendant company formed a subsidiary company called the Kynoch Estates, Ltd., this company taking over the erection of the hotel. The Estates Co., to save expense, decided not to employ a contractor, and that the building of the hotel should be carried through by themselves, the plaintiff being employed to see to the work. The building operations were carried out in accordance with this arrangement, and the plaintiff claimed 5 per cent. commission on the cost of the work 272*l.* 14s., and the 27*l.* before mentioned, making a total of 299*l.* 14s. The Estates Co. afterwards went into liquidation, and Mr. Willis, secretary of the company, was appointed the liquidator. On January 17, 1902, plaintiff wrote a letter addressed to "The Secretary, Kynochs, Ltd., and saying that he understood a transfer of the assets and liabilities of the Estates Co. had been made to the defendant company, and asking, if this was so, that his claim be put before the defendant company. Mr. Willis received this letter, and as liquidator of the Estates Co. replied to plaintiff on January 20 to the effect that the defendant company had taken over the liabilities of the Estates Co. Mr. Willis did not send on this letter to the defendant company. Plaintiff afterwards brought the present action. The main defence was that there had been no novation of the debt.

In the result his Lordship ruled that there was no evidence to go to the jury. He said the plaintiff, by his pleadings, had pinned himself down to certain documents, and could not go beyond these. He held that the letters of January 17 and 20 did not affect defendants. There was no evidence that Willis had authority to conclude any contracts for defendants, and none that the letter of January 17 ever reached them. None of the letters went to prove that the creditors of the Estates Co. held any direct claim against the defendant company. There was nothing to show any assent by defendants to the plaintiff's claim. He accordingly gave judgment for the defendant, with costs, the plaintiff to be at liberty to take out of Court the 27*l.* paid in by the defendants in satisfaction of the first part of his claim.

His Lordship refused to grant a stay of execution with the view to an appeal.

Mr. Arthur Powell, K.C., and Mr. J. Ernest Saunt appeared for the plaintiff, and Mr. Reginald Bray, K.C., and Mr. Boydell-Houghton for the defendants.

ARCHITECT'S SUCCESSFUL ACTION.

MR. JUSTICE WALTON last week in the King's Bench Division delivered a considered judgment in the case of Waterman *v.* the London (Riverside) Cold Storage Co., Ltd., an action brought by Mr. W. H. Waterman, an architect and surveyor, of Cullum-street, E.C., against the defendants for wrongful dismissal and for 1,108*l.* 0s. 11d. balance of fees for work done and money expended for and on behalf of the defendants.

It appeared that the plaintiff had acted as defendants' architect for some time, and on a dispute arising as to the underpinning of a wall at Symons' Wharf, plaintiff was dismissed from his employment by defendants on the ground that he had committed a breach of duty.

His lordship, however, held that the defendants had failed to establish any such breach of duty by the plaintiff, and gave judgment for the plaintiff for 953*l.* 11s. 9d., after deducting certain payments made by defendants and calls due from the plaintiff to the defendants, and which formed the subject matter of an action by the London (Riverside) Cold Storage Co. against Mr. Waterman, the two actions being consolidated.

Mr. English Harrison, K.C., and Mr. R. W. Turner appeared for the plaintiff; and Mr. Gore-Browne, K.C., and Mr. F. Shewell Cooper for the defendants.

EMPLOYERS' LIABILITY ACT:
ARE "HOUSEHOLD STEPS" DEFECTIVE AS "BUILDERS' STEPS?"

AT the Brompton County Court (London) on Monday, before Judge Stonor and a jury, William Davis, a carpenter, 20, Selwood-street, Rotherhithe, S.E., brought an action, under the Employers' Liability Act, against Messrs. Kirk & Randall, builders and contractors, Warren-lane Works, Woolwich, claiming maximum damages in respect of personal injuries, said to have been sustained owing to negligence on the part of the defendants or their servants.

Mr. G. W. Moyses, counsel, appeared for the plaintiff, and Mr. A. Willis, counsel for the defence.

Plaintiff's counsel explained that in January last his client was working for the defendants upon the new Post Office Savings Bank buildings in Blythe-road, Hammersmith. In order to reach his work he was using a very light pair of steps, such as were used for household purposes. The man had previously worked upon a proper scaffolding, formed with trestles and planks, but these had been taken away by one of the foremen, who told plaintiff to use the steps in question instead. While plaintiff was working from the top of these steps on January 21, a knot of one of the cords near the bottom of the steps came through the hole in the side, and the consequent jerk caused plaintiff to fall heavily to the ground. It appeared that the man's injuries included three broken ribs, and there was some doubt as to his being able to resume his ordinary class of work.

The plaintiff bore out his counsel's opening statement. He added that the cord used in the steps was not proper sash-cord, but only common clothes-line, costing a penny for three or four yards.

In cross-examination, plaintiff said that he had been working upon the steps in question during the fortnight preceding the accident, but it never occurred to him to examine to see that they were safe, for it was not usual for workmen to do so. The defendants had offered to meet him under the Workmen's Compensation Act.

Thomas Banks, a painter working on the job, said that although he had sometimes seen the cheap clothes-line used in steps, the proper thing for the purpose was good sash cord.

Mr. Samuel C. Griffiths, architect and surveyor, stated that he considered the cheap, common line used in the steps constituted a "defect," for the proper thing for the purpose was sash-line. The steps in question were not proper builder's steps, but of a lighter make, as used in the household.

The Judge said it was for the jury to say whether the defendants or the foreman were guilty of negligence in allowing the plaintiff to use the steps in question in the state in which they were said to be, and he thought that they would probably answer this in the affirmative; if so, the next question would be as to the amount of the damages.

The jury returned a verdict in favour of the plaintiff, assessing the damages at 134*l.*

His Honour gave judgment accordingly, and allowed costs.

DRAINAGE OF INDUSTRIAL DWELLINGS.

AT the Southwark Police-court, on the 20th ult., Mr. C. Chapman gave his decision in the thirty-three summonses issued by the local Borough Council against the Metropolitan Industrial Dwellings Co., the owners of Ponsonby Buildings. The facts were reported in the *Builder* of the 14th ult. The magistrate said he had come to the conclusion that the contention of Mr. Dodd was right—that he had no power to consider any questions except the application of the by-laws and their practicability. The by-laws admitted of no exception in the case of new buildings which contained a system of drainage where there was no probability of siphonage, and he did not think he was at liberty to create such an exception in the case of old buildings, to which the by-law applied. If this were possible, a dispute might be raised on each case and the by-laws rendered practically valueless. He set aside, therefore, the question of whether the by-law was necessary or even useful in this particular case. Then, as to its practicability, he did not think there was any evidence that compliance with the by-law was not practicable. Two other questions remained — Were these by-laws under Section 202 *ultra vires*, and were they unreasonable? On the first, he was distinctly of opinion that they were not *ultra vires*. As to the second question, if he felt justified in pronouncing an opinion as to the reasonableness of the by-law as applied to this building, he should have great hesitation in deciding the case. He did not, however, feel so justified, but generally he could not hold that they were unreasonable, though he regretted there was no proviso for the case where it was proved that there was practically no danger of siphonage. He had no alternative but to convict the defendants, and there would be a fine of 40s. and 10*l.* 10s. costs on the first summons, and 2s. costs on each of the

others. In reply to an application on behalf of the defendants, Mr. Chapman agreed to state a case.

SUCCESSFUL APPEAL BY THE LONDON COUNTY COUNCIL.

IN the Court of Appeal, composed of Lords Justices Vaughan Williams, Stirling, and Mathew, on the 31st ult., judgment was delivered in the case of the London County Council *v.* Mayor, &c., of the Metropolitan Borough of Wandsworth. This was an appeal by the London County Council against an order of the Divisional Court affirming a decision of Mr. Plowden, the police magistrate sitting at the South-Western Court, who had held that the appellants were liable as the owners of land abutting on a new street to contribute towards expenses that had been incurred in connexion therewith by the respondents, who were the highway authority for the Borough of Wandsworth.

The appeal was heard on March 12, when judgment was reserved.

From the special case stated by Mr. Plowden at the instance of the appellants, it appeared that Rastell-avenue, the street in question, was a new street in the parish of Streatham, and was bounded on the eastern side by a row of houses and on the western side by Tooting Bec Common for a length of 474 ft. Under a scheme sanctioned in 1873, the lands now forming what is known as Tooting Bec Common, which formerly were waste lands belonging to the manor of Tooting Bec, were purchased and dedicated to the public as a recreation ground and became eventually vested for that object in the London County Council. They, in order to make the common a more popular resort, erected a bandstand, provided seats and chairs and some refreshment-rooms, from which they received some 30*l.* or 40*l.* a year. The appellants contended that they were not liable because, although they were trustees of the common, and in that sense "owned" it, yet they were not "the owners" within the meaning of that term in Section 150 of the Metropolis Management Act, 1855, because the common was not capable, by reason of its dedication to the public, to be ever let by them "at a rack rent," and it was only persons who owned property that was capable of giving to its owner a rent that were liable to contribute to the assessment to which the Local Authority desired to make the L.C.C. pay their apportioned share, which, in this instance, was 320*l.* On the other hand, it was said that the L.C.C. were receiving "some" rent from the common, and could very well make more out of it without contravening any of the provisions of the trusts under which they held it as a public pleasure resort.

Mr. Avory, K.C., and Mr. Ryde appeared for the L.C.C.; Mr. Mattinson, K.C., and Mr. Earle for the Local Authority.

Lord Justice Vaughan Williams, in giving judgment, said the opinion he had come to was that this appeal must be allowed. When the common was dedicated to the public it became land held *ex commercio*. He did not think that the London County Council, as the trustees for the public, could ever be said to be in receipt of any rent from the common in the sense that would make them "owners" within the meaning of that term in Section 150 of the Metropolis Management Act, 1855. It was quite true, as the respondents had argued, that they might be able to get some return towards the expenses of maintaining the common from the letting off of portions to cricket clubs or from refreshment stalls, but any such arrangement would be merely ancillary to the main object of the trust, which was to maintain the common as a free and open space for the use of the public at large, and could only exist so far as they in no way interfered with the enjoyment of the public.

Lords Justices Stirling and Mathew read judgments to the same effect, and the appeal was accordingly allowed with costs.

PATENTS OF THE WEEK:

APPLICATIONS PUBLISHED.*

4992 of 1902.—J. E. WILLIAMS: *Reversible Casement.*

A metal or wood casement, comprising three frames hinged together in such manner as shall allow the glazed frame to have the face of the glass, which is usually outwards, turned towards the inside, and so making the casement equivalent to one opening on the left hand or the right hand, as may be desired, and enabling both sides of the glass to be cleaned from inside the room.

8,164 of 1902.—W. BRIGGS: *Water Supply and Water Waste Preventing Apparatus.*

According to this invention, within the cistern a cylinder, or other suitable vessel, containing a siphon is employed. The said cylinder or vessel comprises two compartments, an inner compartment for receiving the water, and an outer compartment for compressed air. From the outer, or compressed-air, compartment a pipe is provided leading to a rubber bladder or bulb, which is enclosed within a porcelain or other suitable case having a hinged fly lid or a sliding push plate or disc. The operation of the apparatus is as follows:—On the water rising within the cistern to the inlet of the cylinder or vessel, the air is compressed in the air compartment so that it inflates the bladder or bulb, forcing back the lid or push-plate and leaving it ready for operation. On pressing the lid or push-plate, the air forces the water over the long leg of the siphon and starts the discharge.

8,205 of 1902.—E. BEAUCHAMP and C. G. DALBONI: *Dining and other such like Tables.*

A dining or such like table so constructed and arranged that by drawing out the end thereof an additional leaf, which lies normally in a folded condition beneath the said end, is raised, opened out, and deposited automatically in the gap beneath such drawn-out end and the other part of the table, and by pushing in the said end the said additional leaf is removed from the gap, folded up, and lowered into its normal position automatically.

5,393 of 1902.—S. DEARDS: *Glazing Roofs and Structures.*

A system of dry glazing in which wood sashes or bars are employed to support the glass, the formation of said sashes with a groove along each side or on the top edge and a raised rib between said grooves, said rib, and when desired said grooves, being covered by a metal cap, which serves also to hold the glass in position, and said sash being provided either with or without channels in its lower edge, for the purpose of collecting moisture which may collect on the sash.

5,625 of 1902.—J. C. BERRY: *Brick-making Machinery.*

This consists in the combination with a pug mill of a slide having moulds for the bricks, such moulds being fitted with sliding bottoms, which descend as the clay is delivered to the mould, and ascend to deliver the brick.

129 of 1902.—G. D. WANSBROUGH: *Roadways.*

The essential feature of this invention is the construction of roads by first forming a cutting or trench of suitable depth (say about 5 ft.), and then forming a skeleton roof over the same to support trays containing the materials of which the road surface is to be composed.

5,211 of 1902.—R. LAWTON and THE ALBION CLAY CO., Ltd.: *Manufacture or Production of Electric Conduits, Drain-pipes, and the like.*

The manufacture of electric conduits, drain-pipes, and the like, lined with bitumen or equivalent, by applying to the exterior and other parts to which the bitumen or equivalent material is not to be applied a material which will prevent the adherence of the bitumen or equivalent material, and then immersing the lengths of conduit, drain-pipes, and the like in heated bitumen or equivalent matter.

8,565 of 1902.—A. G. HUGHES and R. D. WADDELL: *Apparatus for Screening or Separating Road Metal and other Material.*

A screen for separating thin flaky pieces of road metal and similar material from the rest of the mass, having a ribbed, fluted, or corrugated surface and narrow slits or holes between the ribs, through which slits the thin pieces, being directed by the inclined projections, pass.

7,552 of 1902.—W. BELL: *Fittings for Furniture and the like.*

The construction of furniture fittings and the like, consisting in the employment of a base plate having projecting enlarged headed studs and a fixed plate having slots of substantially keyhole shape, and spring-actuated means for retaining the parts in a locked position.

12,184 of 1902.—A. SCHWARZE: *Doors.*

This consists of front and back metal plates rolled and stamped or pressed with ribs, grooves, or their like, and secured to each other.

13,857 of 1902.—T. ASTFALCK: *Cowls.*

A cowl for a chimney or a ventilating pipe, wherein annular or zone-like slots for the entrance of wind are provided in order to produce a suction action, whilst between the several slots there are provided outwardly curved zone-like ring surfaces which deflect the wind impinging thereon towards the adjacent slots.

17,237 of 1902.—H. V. JORGENSEN: *Hot-water Apparatus for Buildings.*

Hot-water heating apparatus, consisting of means for cooling the water in the top of a main rising tube, said cooling being produced by all or part of the return water or by water cooled by the return water.

25,931 of 1902.—C. J. BARHAM, H. C. BULBECK, and C. INNES-BAILLIE: *A Kiln for Drying and Burning Bricks.*

Apparatus for drying bricks, consisting in combination of a plurality of brick-drying chambers arranged side by side and one tier above another, and a plurality of brick-burning chambers arranged endwise and flankwise in relation to said drying chambers on each side thereof, the brick-burning chambers and the brick-drying chambers being constructed with communicating flues, respectively arranged and adapted to co-operate.

28,382 of 1902.—F. VISINTINI: *Lattice or Truss Girders, Columns, and the like.*

Lattice or truss girders for building purposes, the various members of which are so arranged as to resist the tension and compression, in which members draw-bars are embedded in order to resist tensional strain.

28,812 of 1902.—E. POTT: *Tiled Roofs.*

A tiled roof comprising staggered metal underframes connected under the tiles to the rafters, the upper edges of said frames being ridge-shaped or upwardly bent so as to replace the laths, and the lower edges of said frames engaging in the known manner over the heads of the tiles below the frames, being connected together at their longitudinal sides by means of movable bands and loops, or by metal strips engaging under the frame below.

10,599 of 1902.—H. HINZ: *Ball Centrifugal Mills.*

A ball centrifugal mill, consisting of balls of various sizes and number, which are pressed essentially by centrifugal force into an angular ring formed by two ring surfaces which rotate relative to each other, so that the balls roll freely between two ring surfaces.

7,647 of 1902.—J. C. SELLARS: *Manufacture of Building Blocks, Bricks, and other Articles.*

The manufacture of building blocks, bricks, and other articles by combining and mixing together waste material or materials and hydraulic lime, and supplying water in regulated quantities to the articles made from such compound and "air-fallen" lime, and subsequently filling or charging the blocks, bricks, or other articles with tar, pitch, resin, or the like, by supplying such tar, pitch, or the like to the articles in solution.

9,029 of 1902.—W. JAMES: *Manufacture of Leaded Glass.*

This consists of cames for leaded glass composed of lead or other soft metal or alloy, and having a wire or rod affixed thereto.

24,568 of 1902.—R. LEGGOTT: *Casement Windows.*

This invention has for its object the combination with window casements and sashes of apparatus so arranged that the opening sash of the window casement supported in accordance with this invention may be opened in the same way as a "French window sash," and when desired the window sash may be liberated and swung to a position so that the outside surface of said window sash may be turned to the inside of the room and held parallel to the fixed casement, so that the opening through the fixed casement is for the most part, if not entirely, closed, thereby affording means for facilitating cleaning of the outside surface of the window without leaving the room, and at the same time practically closing the opening through the fixed casement.

26,481 of 1902.—M. BRANDT: *Adjustable Wash Basins and Baths.*

The object of this invention is to provide an attachment for stationary washstands by means of which the wash-basins may be raised and lowered to any desired position, and at the same time to provide means for draining the basin. This consists of a wash-basin mounted on the piston of an hydraulic ram, means for supplying pressure and exhaust to the cylinder of the hydraulic ram, the piston being hollow to drain the basin.

28,217 of 1902.—C. E. LONG and J. C. IRVINE: *Sliding Bolt Fastenings.*

Sliding bolt fastenings wherein the slide bolt carries a radially extending key operated lock adapted to be specially levelled along with the bolt when in its locking position to bring the lock into engagement with its lock plate: consisting in providing a box-like structure fixed to the door or frame by which the bolt is to be carried, through which box the bolt is capable of sliding and which is in a position to receive the key-operated lock when the bolt is in engagement to form a lock-plate and to surround the key-operated lock upon its back and side box.

2,773 of 1903.—F. R. WRIGHT: *Combined Dining and Billiard Tables.*

In combined dining and billiard tables, the combination of a crosspiece connected at each end of the table in combination with another crosspiece, which latter is fixed to the telescopic portion of the legs, so that such latter crosspiece may slide up and down by the action of screws.

2,043 of 1903.—H. INGRAM: *Hinges.*

A hinge having a knuckle projecting downward beyond one edge of its leaf or strap, the projecting part of the said knuckle being crossed by a V-groove, and the said knuckle having an opening at each end free to move vertically in sockets, the upper end of the lower one of which is crossed by a groove corresponding to that in the downward projecting part of the knuckle, but at right angles thereto.

2,093 of 1903.—F. NUSCH (Messrs. Knuath & Co.): *Chimney Cowls.*

A chimney cowl comprising in combination a tube of rectangular cross section inserted into the upper edge of the chimney, a flange of said tube resting on the upper edge of the chimney, a roof with open sides composed of two inwardly inclined plates fixed on the upper edge of said tube, inwardly and downwardly inclined deviating plates of rectangular shape fixed beneath the upper edge of the roof, a mantel of oval cross section fixed on the upper end of the tube, a cover of the shape of a truncated cone fixed at some distance above the upper edge of the oval

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

mantel by means of suitable supports, and opening on the top of said cover and openings in the sides of the oval mantel opposite the inwardly inclined plates forming the roof.

2,175 of 1903.—W. PIKE: *Chimney-tops and Ventilating-cowls.*

A chimney-top or ventilating-cowl, having an inclined uptake portion and an outlet end curved approximately to the form of a semi-circle, the inclination of the one portion and the curvature of the other being in the same vertical plane and towards opposite sides of the vertical centre of the flue or ventilating shaft, and the outlet orifice being downwardly directed and situated in an horizontal plane.

24,095 of 1902.—H. J. HADDAN (A. O. Crozier): *Roadways.*

This consists in the combination with the bed of the roadway, of a track for a vehicle wheel, which track is composed of artificial stone and provided at the top with a path for a vehicle wheel and a cable arranged within and extending longitudinally of the track.

24,872 of 1902.—J. H. DOYLE: *Apparatus for Flushing Sinks and the like.*

A device for flushing drain pipes, comprising means connecting the source of water supply and the drain pipe, and means for controlling the flow of water through such connecting means.

7,215 of 1902.—G. C. HURRELL: *Insulating and Protecting Underground Cables.*

An arrangement of pipes or casings for the reception of cables or conductors consisting in the provision and fixing of bearing blocks of a fibrous or yielding nature by forcing them into the pipe or casing away from the pipe joint by pressure.

7,796 of 1902.—E. P. HOOLEY: *Means for and the Method of "Tarring" Broken Slag Macadam and Similar Material.*

A coating mixture composed of tar, pitch, Portland cement, and resin.

8,960 of 1902.—J. B. BRADSHAW: *Saws Suitable for Stone.*

Saws for cutting stone and the like, consisting in forming the cutting edge of the blade wholly or partially of a series of contiguous surfaces at a slight angle to one another, and to the plane of motion of the blade as a whole.

MEETINGS.

FRIDAY, APRIL 3.

Architectural Association.—Mr. Banister F. Fletcher on "Palladio." Illustrated by lantern views. 7.30 p.m.

Royal Institution.—Lecture by the Right Hon. Lord Rayleigh. 9 p.m.

Institution of Civil Engineers.—Students' Visit to the New River Company's Reservoirs and Pumping-station in course of construction at Kempton Park (train from Waterloo Station to Sunbury, 2.35 p.m.).

Junior Institution of Engineers.—(1) Mr. H. E. Yarrow on "Evaporative Trials of one of the Water Tube Boilers for the Chilian Ironclad *Libertad*." (2) Mr. W. Paterson on "Greasy Condensation Water as Boiler Feed." 8 p.m.

SATURDAY, APRIL 4.

Incorporated British Institute of Certified Carpenters (Carpenters' Hall, London-wall).—Mr. W. Middleton on "Arches and Centreing." 6 p.m.

Royal Institution.—Right Hon. Lord Rayleigh, M.A., F.R.S., on "Light: its Origin and Nature." VI. 3 p.m.

The Sanitary Inspectors' Association.—Ordinary general meeting, Carpenters' Hall, London-wall. 6 p.m. Discussion will be opened by Mr. W. H. Grigg on "The Factory and Workshops Act, 1901."

Northern Architectural Association.—Excursion Meeting to the School Board Offices and the School of Cookery.

MONDAY, APRIL 6.

Society of Engineers.—Mr. R. J. Thomas on "Road Maintenance and Administration." 7.30 p.m.

Liverpool Architectural Society (Incorporated).—Second annual general meeting to receive and adopt the Report of the Council; to elect the President and officers for next session, and to elect seven Fellows and two Associates to form the Council; to consider an alteration to Clause 14 in the Schedule of Charges, proposed by the Council, and to hear the President's closing address. 6 p.m.

TUESDAY, APRIL 7.

Institution of Civil Engineers.—Paper to be further discussed, "American Locomotive Practice," by Mr. P. J. Cowan. 8 p.m.

Glasgow Architectural Association—Mr. F. H. Newbury on "Ideals." 8 p.m.

Institute of Builders.—Finance Committee. 3.30 p.m. Council. 4 p.m.

WEDNESDAY, APRIL 8.

Edinburgh Architectural Association—Mr. J. D. Traill on "Woodwork of Louis XIV., XV., and XVI.," illustrated by limelight views. 8 p.m.

Institute of Sanitary Engineers, Ltd.—Examination and Literary Committee 3.30 p.m. General Purposes and Finance Committee 4.15 p.m. Election Committee at 5.15 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 17.—By W. H. & J. A. EADON (at Sheffield).

Sheffield, Yorks.—Baker's Hill, the Queen's Cutlery and Plate Works, area 2,080 yds., f., p... £13,000

March 19.—By FULLER, MOON, & FULLER (at Croydon).

Thornton Heath.—173, 175, and 177, Moffat-rd., f., w.r. 74*l.* 2s. 740

By WM. KING (at Bristol).

Wrington, Somerset.—Corner Pool Farm, 165 a. 1 r. 16 p., f. £3,600
Corner Pool Cottage and 30 p., f. 115
Barrow Gurney, Somerset.—New Ditches Pasture, 8 a. 0 r. 8 p., f. 460

March 20.—By PAXTON & HOLIDAY (at Bicester).

Bainton, Oxon.—Freehold farmhouse and 143 a. 1 r. 12 p., y.r. 137*l.* 11s. 1,950

By VERNON & SONS (at High Wycombe).

Lane End, Bucks.—Freehold iron foundry and land, area 10 a. 3 r. 4 p., with goodwill..... 1,400
Park Lane Farm, 17 a. 3 r. 9 p., f 755
Enclosure of meadow land, 2 a. 3 r. 8 p., f. ... 395
Two freehold cottages, with range of buildings, w.r. 13*l.* 330
Bourne End, Bucks.—New-rd., Quarry View (two cottages), f., p..... 600

March 21.—By MACQUIRE & MERRY (at Northampton).

Kislingbury, Northants.—Hill Farm, 115 a. 1 r. 33 p., f., y.r. 150*l.*... 4,200

March 23.—By MAY & ROWDEN.

Soho.—27, Old Compton-st. (S.), f., p..... 2,350
42 Frith-st. (S.), f., y.r. 90*l.* 3,100
4, Rupert-st., f., y.r. 57*l.* 4s. 850
Portman-sq., 8, George-st. (chambers), f., y.r. 207*l.* 2,150
Westminster.—5, St Ermin's Hill and 17, Snow's-rents (building site), area 1,100 ft., f. 1,160
Pimlico.—91 and 93, Lupus-st. (S.), u.t. 25 yrs., g.r. 20*l.*, y.r. 160*l.*..... 1,450
Aldgate.—12, Mansell-st. (S.), f., y.r. 62*l.*..... 1,260

By WALTER VINCENT.

Marylebone.—19 Exeter-st. (S.), u.t. 18 yrs., g.r. 7*l.* 2s., w.r. 49*l.* 8s. 150
110, 112, 122, and 124, Carlisle-st., u.t. 17¾ yrs., g.r. 16*l.*, w.r. 101*l.* 8s. 285
Kilburn.—89 and 91, Kingsgate-rd. (S.), y.r. 80*l.*, also plot of building land adjoining, area 831 ft., u.t. 88 yrs., g.r. 32*l.* 500
Portman-sq.—23, King-st., and 8, Little George-st., u.t. 20 yrs., g.r. 26*l.*, y.r. 135*l.* 4s..... 500
Kentish Town.—81 and 83, Weedington-rd., u.t. 56 yrs., g.r. 12*l.* 12s., y.r. 62*l.* 10s. 525

March 24.—By C. W. DAVIES & SON.

Islington.—17, Ann-st., u.t. 33½ yrs., g.r. 6*l.*, y.r. 38*l.* 345
26, Prebend-st. (S.), u.t. 24 yrs., g.r. 4*l.* 4s., y.r. 42*l.* 290
37, 38, and 39, Dean-st., u.t. 24 yrs., g.r. 15*l.*, y.r. 94*l.*..... 555
Caledonian-rd.—16, Nailour-st., u.t. 49 yrs., g.r. 5*l.* 10s., y.r. 30*l.*..... 290
Holloway.—13, Mayton-st., u.t. 62¼ yrs., g.r. 6*l.* 10s., y.r. 34*l.*..... 320

By DEBENHAM, TEWSON, & CO.

Bloomsbury.—43 to 49 (odd), Gower-st., u.t. 8 yrs., g.r. 168*l.*, y.r. 510*l.*..... 1,190
57, Gower-st., u.t. 9½ yrs., g.r. 40*l.*, y.r. 135*l.* .. 455
71, 75, 77, 81, and 83, Gower-st., u.t. 21 yrs., g.r. 160*l.*, y.r. 660*l.* 3,825
8, Great Russell-st. (S.), u.t. 12 yrs., g.r. 45*l.*, y.r. 95*l.* 330
6A and 8, Ridgmount-st. (builder's workshops, stores, &c.), area 10,270 ft., u.t. 7 yrs., g.r. 165*l.*, p. 1,200
City of London.—Cannon-st., f.g.r. 915*l.*, reversion in 28½ yrs. 40,000

By H. DONALDSON & SON.

Mile End.—58 and 62, Bloomfield-rd., u.t. 63¼ yrs., g.r. 9*l.*, y.r. 72*l.* 760
Dalston.—22, Gayhurst-rd., u.t. 46 yrs., g.r. 5*l.*, e.r. 36*l.* 360

By FLEURET, SONS, & ADAMS.

Dulwich.—72 to 88 (even), Darrell-rd., f., w.r. 28*l.* 16s..... 2,740
244, Underhill-rd. (S.), f., y.r. 55*l.*... 920
246, 248, and 250, Underhill-rd., f., w.r. 117*l.* .. 940

By HOLLIDAY & STANGER.

Streatham.—Oakdale-rd., Dunraven, Lexington, Oakdene House, Rosemont, Coniston, and Weston Lea, u.t. 94¾ yrs., g.r. 88*l.* 4s., y.r. 375*l.* 3,405
Stanthorpe-rd., Claughton, u.t. 94 yrs., g.r. 9*l.* 10s., e.r. 55*l.* 585
17, Hopton-rd., u.t. 79 yrs., g.r. 9*l.*, y.r. 80*l.* .. 550

By JOSEPH STOWER.

Hackney.—1 to 4, Grove-la., c., w.r. 52*l.* 670

By G. TROLLOPE & SONS.

Kensington.—57, Earl's Court-sq., u.t. 70½ yrs., g.r. 40*l.*, y.r. 140*l.*..... 1,500

By FREDK. WARMAN.

Canonbury.—18, Marquess-rd., u.t. 42 yrs., g.r. 10*l.*, e.r. 75*l.* 675
Holloway.—6, St. John's Pk., u.t. 48 yrs., g.r. 7*l.*, p. 540
Bowes Park.—5, Whittington-rd., u.t. 76 yrs., g.r. 6*l.* 15s., e.r. 30*l.*..... 250

By BELLAMY & CO. (at Walham Green).

Fulham.—40, Rostrevor-rd., u.t. 85 yrs., g.r. 6*l.* 10s., e.r. 45*l.*..... 470
South Kensington.—3, Ifield-rd., u.t. 46 yrs., g.r. 10*l.*, e.r. 60*l.* 450
Hampstead-road.—33, Werrington-st., u.t. 46 yrs., g.r. 7*l.*, y.r. 38*l.* 370

By ORGILL, MARKS, & LAWRENCE (at Masons' Hall Tavern).

City of London.—Paternoster-row, the Chapter Coffee House (p.h.), u.t. 63 yrs., y.r. 400*l.*, with goodwill..... 25,450

By J. C. PLATT (at Hammersmith).

Hammersmith.—13, 14, 15, and 16, Montague-st., u.t. 72 yrs., g.r. 15*l.*, w.r. 137*l.* 16s. 1,075
167, The Grove, u.t. 73 yrs., g.r. 11*l.*, e.r. 60*l.* 615

March 25.—By JOHN BOTT & SONS.

Peckham.—81, Rye-la. (S.), u.t. 55 yrs., g.r. 11*l.* 11s., y.r. 100*l.* 1,630
99 and 101, Rye-la. (S.), u.t. 56½ yrs., g.r. 24*l.*, y.r. 231*l.* 4,240
Rye-la., l.g.r. 51*l.*, u.t. 56½ yrs., g.r. 1*l.*, with reversion 1,150

By Messrs. CRONK.

Westerham, Kent.—High-st., The Pheasantry (S.), f., y.r. 60*l.* 1,000

By DYER, SON, & HILTON.

Eltham, Kent.—Court-rd., Fryern House, u.t. 87 yrs., g.r. 10*l.*, p. 2,420
Court-rd., Oak Lodge, u.t. 87 yrs., g.r. 20*l.*, y.r. 110*l.* 1,350
Lee.—3 and 5, Birch-gr., u.t. 78 yrs., g.r. 18*l.*, y.r. 115*l.* 950
15, St. Mildred's-rd., u.t. 78 yrs., g.r. 12*l.* 10s., y.r. 68*l.* £600
Blackheath.—24, Lewisham-hill, u.t. 38 yrs., g.r. 12*l.*, y.r. 65*l.* 520

By ERNEST OWERS.

Hampstead.—6, Sherriff-rd., f., e.r. 85*l.* 1,300
98, Abbey-rd., u.t. 50 yrs., g.r. 10*l.*, e.r. 100*l.*... 960

By RAVENSHEAR & MASSY.

Hanwell.—147 and 149, Uxbridge-rd. (S.), f., y.r. 230*l.* 4,750
143 and 145, Uxbridge-rd. (S.), y.r. 110*l.* 2,755
1 and 4, Broadway (S.), f., y.r. 200*l.* 3,675
1 and 2, Milford-villas, f., y.r. 110*l.* 2,800
Brixton.—87, 89, 91, and 93, Brixton-hill (S.), u.t. 76 yrs., g.r. 150*l.*, y.r. 230*l.* 1,250
Paddington.—5 and 6, South Wharf-rd., u.t. 18 yrs., g.r. 10*l.*, y.r. 60*l.*..... 350
8, York-row, u.t. 24¾ yrs., g.r. 5*l.*, w.r. 31*l.* 4s. 125

By E. W. RICHARDSON.

Southwark.—2, Falmouth-rd., u.t. 7¾ yrs., g.r. 5*l.*, y.r. 42*l.*..... 145
20 and 21, Union-sq., u.t. 11¼ yrs., g.r. 10*l.* 10s., y.r. 62*l.* 260

By R. TIDEY & SON.

De Beauvoir Town.—58, De Beauvoir-rd., u.t. 14 yrs., g.r. 4*l.*, y.r. 36*l.* 240
Highgate.—27 to 35 (odd), Retcar-st., u.t. 77 yrs., g.r. 25*l.*, w.r. 198*l.* 18s. 1,235

By F. G. WHEATLEY & SON.

Erith, Kent.—South-rd., f.g.r.'s 60*l.*, reversion in 45 yrs. 1,620

By FULLER, MOON, & FULLER (at Tooting).

Tooting.—1 to 4, Angel-cot., f., w.r. 44*l.* 4s. 435
1 to 5, Red Lion-cot., f., w.r. 76*l.* 14s. 735
1 to 6, Spring-cot., f., w.r. 100*l.* 2s..... 1,180
Mitcham, Surrey.—1 and 2, Phipps Bridge-cot., and plot of garden ground, f., w.r. 31*l.* 4s. .. 485
1 to 6, Everett's-pl., f., w.r. 74*l.* 2s. 730
1 to 6, Church-rd., and plot of land adjoining, f., y.r. 106*l.* 4s. 1,400
Phipps Bridge-rd., two blocks of building land, f. 595

March 26.—By CHESTERTON & SONS.

Kensington.—Avonmore-rd., Avonmore-mansions (flats), u.t. 63½ yrs., g.r. 90*l.*, y.r. 1,169*l.* 6,500
46, Argyll-rd., u.t. 51 yrs., g.r. 12*l.*, y.r. 115*l.* .. 1,580

By C. RAWLEY CROSS & CO.

Shepherd's Bush.—25 and 27, Ethelden-rd., u.t. 78¼ yrs., g.r. 12*l.*, y.r. 78*l.* 850

By FAREBROTHER, ELLIS, & CO.

Kensington.—6 and 8, Glazbury-rd., u.t. 73½ yrs., g.r. 2*l.*, y.r. 145*l.* 1,595

By G. GOULDSMITH, SON, & CO.

Pimlico.—13, St. George's-rd., u.t. 23 yrs., g.r. 14*l.*, y.r. 120*l.*..... 1,270
17, Gloucester-st., u.t. 26 yrs., g.r. 10*l.*, y.r. 90*l.* 730
Beckenham, Kent.—27, Southend-rd., u.t. 55 yrs., g.r. 18*l.*, p..... 1,000

By KEMSLEYS'.

Chadwell Heath, Essex.—Romford-rd., Eagle House and 6 a. 0 r. 5 p., f., p. 2,125

By C. C. & T. MOORE.

Bethnal Green.—54 and 56, Fuller-st., u.t. 71 yrs., g.r. 35*l.*, w.r. 388*l.* 14s. 1,710
Limehouse.—86 and 88, Eastfield-st. (S.), f., w.r. 54*l.* 12s. 440
Bow.—358 and 360, Old Ford-rd., u.t. 50¾ yrs., g.r. 8*l.*, y.r. 56*l.*..... 600

By STIMSON & SONS.

Kensington.—67, Marloes-rd., u.t. 47 yrs., g.r. 7*l.*, y.r. 80*l.* 910
Camberwell.—18 and 19, Dagmar-rd., u.t. 55 yrs., g.r. 14*l.*, y.r. 76*l.* 775
1 to 5, Canal Bank, u.t. 83½ yrs., g.r. 25*l.*, w.r. 115*l.* 14s. 400
8, Sears-st., f., e.r. 32*l.* 500
Peckham.—182, 184, and 186, Sumner-rd., f., w.r. 98*l.* 16s. 1,200
188, Sumner-rd. (S.), f., e.r. 40*l.* 430
170, 172, and 174, St. George's-rd., u.t. 60 yrs., g.r. 10*l.*, w.r. 100*l.* 2s. 735
Brixton.—26, Tintern-st., u.t. 72 yrs., g.r. 6*l.* 7s. 6d., e.r. 32*l.*... 200
Kennington.—67, St. Agnes-pl., u.t. 65 yrs., g.r. 6*l.* 6s., y.r. 40*l.* 395
Brockley.—67, Tressillian-rd., u.t. 69 yrs., g.r. 8*l.* 10s., e.r. 60*l.* 615
Tottenham.—39 to 46, Albert-rd., u.t. 74 yrs., g.r. 50*l.* 8s., w.r. 317*l.* 4s. 1,500

By J. A. & W. THARP.

Walworth.—56 to 78 (even), Faraday-st., u.t. 49 yrs., g.r. 57*l.*, w.r. 67*l.* 16s. 1,625
Bethnal Green.—230 and 232, Vallance-rd., f., y.r. 52*l.* 790

By VARLEY & LOCKING.

Chingford.—13, Buxton-rd., u.t. 78 yrs., g.r. 7*l.*, y.r. 33*l.* 275
Enfield.—Bush Hill Pk., 62, Wellington-rd., u.t. 72 yrs., g.r. 12*l.*, e.r. 50*l.* 440

By WESTON & SONS.

Barnes.—50, 52, 54, and 56, Lonsdale-rd., f., y.r. 186*l.* 2,325
Gray's Inn-rd.—No. 217 (S.), f., y.r. 65*l.* 1,520

March 27.—By BUNCH & DUKE.

Clapton.—42, Median-rd., f., e.r. 42*l.* 595

By HERRING, SON, & DAW.

Clapham.—25, Cedars-rd., u.t. 56 yrs., g.r. 25*l.*, y.r. 100*l.* 570
Balham.—58, Rossiter-rd., u.t. 71 yrs., g.r. 9*l.*, e.r. 45*l.*..... 380
Brixton.—6, 7, and 8, Calders-row, f., w.r. 72*l.* 16s. 750
Sutton, Surrey.—Carshalton-rd., f., y.r. 28*l.* 340

By MARTIN, CLARKE, & CO.

Camberwell.—70 to 92 (even), Wyndham-rd. (four shops and nine houses), w.r. 304*l.* 6s.: also plot of land in rear, area 3,950 ft., f. 4,540

By PROTHEROE & MORRIS.

Finsbury Park.—182, Green-lanes, area 2¼ a., u.t. 36½ yrs., g.r. 43*l.* 17s., p. 830

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.		
Hard Stocks	1 14 0	per 1,000 alongside, in river.	
Rough Stocks and Grizzles.....	1 11 0	,,	,,
Facing Stocks....	2 12 0	,,	,,
Shippers	2 5 0	,,	,,
Flettons	1 7 6	,,	at railway depôt
Red Wire Cuts ..	1 12 0	,,	,,
Best Fareham Red	3 12 0	,,	,,
Best Red Pressed Ruabon Facing	5 0 0	,,	,,
Best Blue Pressed Staffordshire ..	4 5 0	,,	,,
Do. Bullnose	4 11 0	,,	,,
Best Stourbridge Fire Bricks	4 8 0	,,	,,
GLAZED BRICKS.			
Best White and Ivory Glazed Stretchers.....	13 0 0	,,	,,
Headers	12 0 0	,,	,,
Quoins, Bullnose, and Flats.....	17 0 0	,,	,,
Double Stretchers	19 0 0	,,	,,
Double Headers..	16 0 0	,,	,,
One Side and two Ends.....	19 0 0	,,	,,
Two Sides and one End	20 0 0	,,	,,
Splays, Chamfered, Squints.....	20 0 0	,,	,,
Best Dipped Salt Glazed Stretchers and Headers	12 0 0	,,	,,
Quoins, Bullnose, and Flats.....	14 0 0	,,	,,
Double Stretchers	15 0 0	,,	,,
Double Headers..	14 0 0	,,	,,
One Side and two Ends.....	15 0 0	,,	,,
Two Sides and one End	15 0 0	,,	,,
Splays Chamfered, Squints.....	14 0 0	,,	,,
Second Quality White and Dipped Salt Glazed	2 0 0	,,	less than best.
Thames and Pit Sand	7 0	per yard, delivered.	
Thames Ballast	6 0	,,	,,
Best Portland Cement	30 0	per ton, delivered.	
Best Ground Blue Lias Lime..	21 0	,,	,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 10s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.
Bath ,, ...	1 7	,, ,,
Farleigh Down Bath ..	1 8	,, ,,
Beer in blocks	1 6	,, ,,
Grinshill ,, ...	1 10	,, ,,
Brown Portland in blocks	2 2	,, ,,
Darley Dale in blocks..	2 4	,, ,,
Red Corsehill ,,	2 5	,, ,,
Closeburn Red Freestone	2 0	,, ,,
Red Mansfield ,,	2 4	,, ,,
YORK STONE—*Robin Hood Quality.*	s. d.	
Scappled random blocks	2 10	per ft. cube, deld. rly. depôt.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per foot super. ,,
6 in. Rubbed two sides Ditto, Ditto	2 6	,, ,,
3 in. Sawn two sides slabs (random sizes)..	0 11½	,, ,,
2 in. to 2½ in. Sawn one side slabs (random sizes)	0 7¼	,, ,,
1¼ in. to 2 in. ditto, ditto	0 6	,, ,,
BEST HARL YORK—		
Scappled random blocks	3 0	per ft. cube ,,
6 in. sawn two sides, landings to sizes (under 40 ft. sup.)	2 8	per ft. super. ,,
6 in. Rubbed two sides Ditto	—	,, ,,
3 in. sawn two sides slabs (random sizes)	1 2	,, ,,
2 in. self-faced random flags.....	0 5	,, ,,
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube.
,, ,, ,, 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
,, ,, ,, 3 in. do.	1 2½	,, ,,

SLATES.

in. in.	£ s. d.	
20×10 best blue Bangor..	13 2 6	per 1000 of 1200 at ry. dep.
20×12 ,, ,, ,, ..	13 17 6	,, ,,
20×10 best seconds ,,	12 15 0	,, ,,
20×12 ,, ,, ,,	13 10 0	,, ,,
16×8 best ,,	7 0 0	,, ,,
20×10 best blue Portmadoc	12 5 0	,, ,,
16×8 best blue Portmadoc	6 5 0	,, ,,
20×10 best Eureka unfading green....	15 2 6	,, ,,
20×12 ,, ,,	17 2 6	,, ,,
18×10 ,, ,,	12 10 0	,, ,,
16×8 ,, ,,	10 5 0	,, ,,
20×10 permanent green	11 0 0	,, ,,
18×10 ,, ,,	9 5 0	,, ,,
16×8 ,, ,,	6 10 0	,, ,,

PRICES CURRENT (*Continued*).

TILES.

	s. d.	
Best plain red roofing tiles..	42 0	per 1,000, at rly. depôt.
Hip and valley tiles....	3 7	per doz. ,, ,,
Best Broseley tiles	50 0	per 1,000 ,, ,,
Do. Ornamental Tiles	52 6	,, ,, ,,
Hip and valley tiles....	4 0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 ,, ,,
Do. ornamental Do.	60 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles.....	3 0	,, ,,
Best Red or Mottled Staffordshire Do. (Peakes)	51 0	per 1,000 ,, ,,
Do. Ornamental Do.	54 6	,, ,, ,,
Hip tiles	4 1	per doz. ,, ,,
Valley tiles.....	3 8	,, ,, ,,
Best "Rosemary" brand plain tiles	48 0	per 1,000 ,, ,,
Do. Ornamental Do.	50 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles	3 8	,, ,, ,,

WOOD.

	At per standard. £ s. d.	£ s. d.	
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.....	15 10 0	16 10 0	
Deals: best 3 by 9.....	14 10 0	15 10 0	
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.....	11 10 0	12 10 0	
Battens: best 2½ by 6 and 3 by 6 ..	0 10 0	less than 7 in. and 8 in.	
Deals: seconds	1 0 0	less than best	
Battens: seconds	0 10 0	,, ,, ,,	
2 in. by 4 in. and 2 in. by 6 in. ..	9 0 0	9 10 0	
2 in. by 4½ in. and 2 in. by 5 in. ..	8 10 0	9 10 0	
Foreign Sawn Boards—			
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.	
¾ in.	1 0 0	,,	
Fir timber: Best middling Danzig or Memel (average specification	At per load of 50 ft. 4 10 0	5 0 0	
Seconds	4 5 0	4 10 0	
Small timber (8 in. to 10 in.)	3 12 6	3 15 0	
Small timber (6 in. to 8 in.).....	3 0 0	3 10 0	
Swedish balks	2 15 0	3 0 0	
Pitch-pine timber (30 ft. average)..	3 5 0	3 15 0	
JOINERS WOOD.	At per standard.		
White Sea: First yellow deals, 3 in. by 11 in.....	23 0 0	24 0 0	
3 in. by 9 in.	21 0 0	22 10 0	
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0	
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0	
,, ,, 3 in. by 9 in.	17 10 0	19 0 0	
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0	
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0	
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0	
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0	
Do. 3 in. by 9 in.....	18 0 0	19 10 0	
Battens.....	13 10 0	15 0 0	
Second yellow deals, 3 in. by 11 in.....	16 0 0	17 0 0	
Do. 3 in. by 9 in.	14 10 0	16 0 0	
Battens.....	11 10 0	12 10 0	
Third yellow deals, 3 in. by 11 in.....	13 10 0	14 0 0	
Do. 3 in. by 9 in.	13 0 0	14 0 0	
Battens	10 0 0	11 0 0	
White Sea and Petersburg:—			
First white deals, 3 in. by 11 in.	14 10 0	15 10 0	
,, ,, 3 in. by 9 in.	13 10 0	14 10 0	
Battens.....	11 0 0	12 0 0	
Second white deals 3 in. by 11 in.	13 10 0	14 10 0	
,, ,, ,, 3 in. by 9 in.	12 10 0	13 10 0	
,, ,, ,, battens.....	9 10 0	10 10 0	
Pitch-pine: deals	16 0 0	18 0 0	
Under 2 in. thick extra	0 10 0	1 0 0	
Yellow Pine—First, regular sizes ..	33 0 0	upwards.	
Oddments	22 0 0	24 0 0	
Seconds, regular sizes	24 10 0	26 10 0	
Yellow Pine Oddments	20 0 0	22 0 0	
Kauri Pine—Planks, per ft. cube..	0 3 6	0 4 6	
Danzig and Stettin Oak Logs—Large, per ft. cube	0 2 6	0 3 6	
Small ,, ,, ...	0 2 3	0 2 6	
Wainscot Oak Logs, per ft. cube ..	0 5 0	0 5 6	
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8	
¾ in. do. do.	0 0 6½	- - -	
Dry Mahogany—			
Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11	
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0	
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0	
Teak, per load	16 10 0	20 0 0	
American Whitewood Planks—			
Per ft. cube	0 4 0	- - -	
Prepared Flooring—	Per square.		
1 in. by 7 in. yellow, planed and shot.....	0 13 6	0 17 6	
1 in. by 7 in. yellow, planed and matched.....	0 14 0	0 18 0	
1¼ in. by 7 in. yellow, planed and matched.....	0 16 0	1 1 6	
1 in. by 7 in. white, planed and shot.....	0 11 6	0 13 6	
1 in. by 7 in. white, planed and matched.....	0 12 0	0 14 0	
1¼ in. by 7 in. white, planed and matched.....	0 14 6	0 16 6	
¾ in. by 7 inch yellow matched and beaded or V-jointed boards	0 11 0	0 13 6	
1 in. by 7 in. do. do. do.	0 14 0	0 18 0	
¾ in. by 7 in. white do. do.	0 10 0	0 11 6	
1 in. by 7 in. do. do. do.	0 11 6	0 13 6	

6-in. at 6d. to 9d. per square less than 7-in.

JOISTS, GIRDERS, &c.

	In London, or delivered. Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders ,, ,,	8 2 6	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6
Flitch Plates	8 5 0	8 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 2 6	8 5 6

PRICES CURRENT (*Continued*).

METALS.

	Per ton, in London £ s. d.	£ s. d.
IRON—		
Common Bars.....	7 15 0	8 5 0
Staffordshire Crown Bars, good merchant quality	8 5 0	8 15 0
Staffordshire "Marked Bars" ..	10 10 0	- - -
Mild Steel Bars	9 0 0	9 10 0
Hoop Iron, basis price.....	9 5 0	9 10 0
,, ,, galvanised.....	16 0 0	- - -
(* And upwards, according to size and gauge.)		
Sheet Iron, Black.—		
Ordinary sizes to 20 g.	10 0 0	- - -
,, ,, to 24 g.	11 0 0	- - -
,, ,, to 26 g.	12 10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	12 15 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.....	14 5 0	- - -
Sheet Iron, Galvanised, flat, best quality:—		
Ordinary sizes to 20 g.....	16 0 0	- - -
,, ,, 22 g. and 24 g.	16 10 0	- - -
,, ,, 26 g.....	18 0 0	- - -
Galvanised Corrugated Sheets:—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 15 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.....	14 5 0	- - -
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker ..	12 0 0	- - -
,, ,, 22 g. and 24 g.	13 0 0	- - -
,, ,, 26 g.	14 5 0	- - -
Cut nails, 3 in. to 6 in.	9 5 0	9 15 0
(Under 3 in. usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lbs. & up.	15 15 0	- - -
Pipe in coils	16 5 0	- - -
Soil pipe	18 15 0	- - -
Compo Pipe	18 15 0	- - -
ZINC—Sheet—		
Vieille Montagne ..... ton	28 5 0	- - -
Silesian	28 0 0	- - -
COPPER—		
Strong Sheet ..... per lb.	0 0 10½	- - -
Thin ..... ,,	0 0 11½	- - -
Copper nails ..... ,,	0 0 11½	- - -
BRASS—		
Strong Sheet..... ,,	0 0 10	- - -
Thin ,, ... ,,	0 0 11	- - -
TIN—English Ingots ..... ,,	0 1 5	- - -
SOLDER—Plumbers' ..... ,,	0 0 6½	- - -
Tinmen's ..... ,,	0 0 8½	- - -
Blowpipe ..... ,,	0 0 9½	- - -

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
,, fourths.....	1¾d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, fourths.....	2½d. ,, ,,
26 oz. thirds	4d. ,, ,,
,, fourths.....	3¼d. ,, ,,
32 oz. thirds	5d. ,, ,,
,, fourths.....	4¼d. ,, ,,
Fluted sheet, 15 oz.	3d. ,, ,,
,, 21 oz.	4d. ,, ,,
⅛ Hartley's Rolled Plate	1¾d. ,, ,,
⅛ ,, ,, ,, ...	2d. ,, ,,
¼ ,, ,, ,, ...	2¼d. ,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels..	per gallon	0 2 3
,, ,, ,, in drums.....	,,	0 2 7
Boiled ,, ,, in pipes or barrels..	,,	0 2 5
,, ,, ,, in drums.....	,,	0 2 9
Turpentine, in barrels	,,	0 3 8
,, in drums	,,	0 3 10
Genuine Ground English White Lead	per ton	21 10 0
Red Lead, Dry	,,	20 0 0
Best Linseed Oil Putty.....	per cwt.	0 8 0
Stockholm Tar.....	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak.....	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 6
Superfine Hard-drying Oak, for Seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

COMPETITIONS, CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITION.

Nature of Work.	By whom Required.	Premiums.	Designs to be delivered
*Girls High School, Stockton on-Tees	The Governors	25*l.*, 15*l.*, and 10*l.*	May 13
*Public Baths	Gillingham (Kent) U.D.C.	20*l.*, 10*l.*, and 5*l.*	May 30

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
*Additions to Factory, Queen's-road, Halifax	Messrs. J. Mackintosh & Co., Ltd.	M. Hall, Architect, 1, Harrison-road, Halifax	April 7
*Hospital, Uxbridge-road	Hampton U.D.C.	S. H. Chambers, Surveyor, Public Offices, Hampton, Middlesex	do.
Flags, Kerbs, &c., near Manchester	Worsley U.D.C.	J. T. Proffitt, Surveyor, Council Offices, Worsley	do.
Granite Road Metal, &c.	Chingford U.D.C.	H. Bird, 14, The Parade, Chingford	do.
Sewers, Christleton	Chester R.D.C.	F. E. Priest, Civil Engineer, 13, Harrington-street, Liverpool	do.
*Wood Paving Works	Willesden District Council	Council's Engineer, Public Offices, Kilburn, N.W.	do.
Granite Road Metal	Woodhall Spa U.D.C.	J. E. Chatterton, Horncastle, Lincs	April 8
*Sewer Work and New Public Lavatory	Holborn Borough Council	Council's Surveyor, 197, High Holborn, W.C.	do.
Chapel and Schools, Bentham, Kendal		J. F. Curwen, Architect, 26, Highgate, Kendal	do.
Public Convenience, Reddish-road	Stockport Corporation	J. Atkinson, Civil Engineer, St. Petersgate, Stockport	April 9
Gasholder Tank	Stanraer (N.B.) Gas Co.	W. G. Belford, Dunbae House, Stranraer	do.
School Buildings, near Mansfield	Pleasley School Board	J. Perkin, Architect, Main-street, Shirebrook	do.
Road Making, Trinity-road, &c.	Chelmsford R.D.C.	H. G. Warne, Surveyor, Market-road, Chelmsford	April 10
Reservoir, near Macclesfield	Bollington U.D.C.	W. H. Radford, Civil Engineer, King-street, Nottingham	April 11
Enlargement of Chapel, Blaengarw		J. M. Jones, 54, King Edward-street, Blaengarw, Glam.	do.
*Isolation Hospital at Thistle Hill, Knaresborough	Harrogate & Knaresboro' Hos. Brd.	G. H. Stranger, F.R.I.B.A., Queen's Chambers, Wolverhampton	April 13
*Public Offices and Fire Station	Aldershot U.D.C.	C. E. Hutchinson, Architect, 11, John-street, Bedford-row	April 14
Reservoir Works, Crosshaven	Kinsale R.D.C.	R. Evans, Civil Engineer, 53, South Mall, Cork	April 15
*Erection of Cottages on Blackley Estate	Manchester Corporation	City Architect, Town Hall, Manchester	do.
Road Materials	Midsomer Norton (Smrst.) U.D.C.	Surveyor, Council Offices, Midsomer Norton	do.
Church Restoration, Winterton, Lincs		C. H. Fowler, Architect, The College, Durham	do.
Cast-iron Pipes, &c.	Barrow-in-Furness Corporation	A. H. Strongitharm, Civil Engineer, Barrow	April 16
Broken Granite	Rutland County Council	B. A. Adam, Council Offices, Oakham	do.
Refuse Destructor, Stabling, &c.	Preston Corporation	Borough Surveyor, Town Hall, Preston	April 18
Infirmary Superstructure, Parkside Asylum	Macclesfield Council	H. Beswick, Architect, Newgate-street, Chester	do.
Schools	Rowley Regis (Staffs) School Board	Merdith & Pritchard, Architects, Kidderminster	April 20
*Underground Conveniences, Offord-road	Islington Borough Council	Council's Engineer, Town Hall, Upper-street, N.	do.
*Making-up Roads	Tottenham U.D.C.	Council's Engineer, 712, High-road, Tottenham	April 21
*Water Supply, &c., Works	Daventry Borough Council	Council's Surveyor, The Moot Hall, Daventry	do.
*New Sorting Office, Manor Park, E.	Commissioners of H.M. Works	H.M. Office of Works, Storey's Gate, S.W.	do.
*Postman's Sorting Office, Walham Green	do.	do.	do.
*New Sorting Office, Kentish Town, N.W.	do.	do	April 22
*Fire Main and Hydrants, South-Eastern Hospital	Metropolitan Asylums Board	Office of the Board, Embankment, E.C.	do.
*Ironwork for Ornamental Gates, &c.	Bradford Corporation	Town Clerk's Office, Bradford	April 23
Drainage Works, Balfron	Stirling County Council	A. Forbes, 146, Buchanan-street, Glasgow	do.
*Making-up, Paving and Lighting Roads	Hanwell U.D.C.	Council's Surveyor, Hanwell, W.	April 27
*Painting and Repairs to Workhouse, &c., Endell-street	St. Giles-in-the-Fields Guardians	The Clerk, 57, Broad-street, Bloomsbury, W.C.	April 28
Electrical Sub-station, Whickham-street	Sunderland Corporation	J. F. C. Snell, Civil Engineer, Town Hall, Sunderland	May 1
*Municipal Buildings	Deptford Borough Council	Lanchester, Stewart, & Rickards, 1, Vernon-place, W.C.	May 11
*Public Baths and Underground Convenience	Camberwell Borough Council	Council's Engineer, Town Hall, Camberwell	May 12
Offices, &c.	Messrs. Hargreaves Bros. & Co.	T. B. Thompson, Architect, 15, Parliament-street, Hull	No date.
Two Houses, Moor-road, Hunslet, Leeds		J. B. Read, Architect, Estate Offices, Waterloo-road, Hunslet	do.
Shops, Warehouse, &c.	Newport (Mon) Co-op. Society	Swash & Bain, Architects, Midland Bank Chambers, Newport, Mon.	do.
Cemetery Chapel, Stanwell, Middlesex	Stanwell Parish Council	R. Low, Architect, Clarence-street, Staines	do.
*Proposed Municpal Offices	Crewe Corporation	Borough Surveyor, Municipal Offices, Crewe	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*District Surveyors (four)	London County Council	See advertisement	April 24

Those marked with an asterisk (*) are advertised in this Number. *Competitions* iv. ***Contracts*, iv. vi. viii. x. & xxi.** ***Public Appointments*,** xviii.

TO CORRESPONDENTS.

J. C. C. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

*** Next week communications for insertion under this heading must reach us *not later than 10 a.m.* on Wednesday, as, owing to the Easter holidays, we go to press a day earlier than usual.

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERFAU (Wales).—For the erection of thirty-three cottages for the Building Club. Mr. R. Edwards, architect, Treharris, Wales :—

Lewis Davies, Abercynon..... £175 per house

CURRAGH CAMP (Ireland).—For the erection of a manse, for the Army and Navy Committee of the Methodist Church of Ireland. Mr. Geo. F. Beckett, architect, 97, Stephen's-green, S., and Mr. S. H. Bolton, C.E., surveyor, 2, Hume-street, Dublin :—

Hamilton & Titterington	£1,719 0 0	Hull & Co. ..	£1,390 0 0
J. Pile	1,695 0 0	Coventry & Co.	1,350 0 0
G. Langley ..	1,663 0 0	J. & R. Thompson	1,348 0 0
Collen Bros., Ltd.	1,650 0 0	McKee & McNally	1,333 8 3
Shendan	1,567 1 8	J. Kidd	1,318 0 0
O'Mahony ..	1,417 0 0		

[The lowest tender representing more than the Committee wished to lay out, the project was abandoned.]

COTFORD.—For additions to the Cotford Asylum (Somerset and Bath Asylum), near Taunton. Messrs. G. T. Hine & Co., architects, 35, Parliament-street, S.W. :—

Ellis & Son..	£47,944 19 10	W. E. Blake	£32,510 0 0
Pethick Bros.	37,444 0 0	Shillitoe & Son	32,000 0 0
Wakeham Bros.	36,033 0 0	A. N. Coles..	31,872 9 7
Broad, Ltd.	35,859 0 8	Pollard & Co., Ltd. ..	31,437 0 0
Howe & Co.	35,577 16 0	Moss & Sons, Ltd.	30,937 15 7
Westcott, Austin, & White	34,399 0 0	Hayward & Wooster ..	30,844 0 0
Spiller & Son	34,281 0 0	Willcock & Co.	30,560 0 0
McCormick & Sons	33,544 0 0	Stephens & Son, Ltd...	30,355 0 0
Dart & Pollard	33,200 0 0	King & Son	30,207 0 0
D. W. Davies	33,047 0 0	H.W. Pollard, Bridgewater‡	29,470 0 0
A. J. Beaven	33,000 0 0		
Stephens, Bastow. & Co.	32,651 0 0		

‡ Recommended for acceptance.

DONEGAL (Ireland).—For the erection of a creamery for the Co-operative Dairy Society. Mr. Roberts, architect, Mr. Fant, engineer :—

James Woods	£543 0	James Mullin, Donegal*	£528
Patrick Biver	533 10		

GOMERSAL (Yorks).—For the erection of an engine-house, Upper Spen Mills. Mr. T. Leadley, architect, 3, Coleridge-place, Bradford :—

Masonry and Joinery.—Wilkinson & Sons, East Parade, Bradford* .....
Plumbing.—Herbert H. Bentley, Cleckheaton* £1,596
Plastering.—T. Barber, Gomersal* .....
Slating.—Nelson & Son, Bradford* .....
Ironfoundery.—Lees & Sons, Gomeral* ....

GRAYS (Essex).—For the erection of the Carnegie Free Library in Orsett-road, Grays. Mr. Christopher M. Shiner, architect, 6, 7, and 8, Crutched Friars, E.C., and Grays, Essex :—

Davey, Ltd.	£2,765 0	W. Potter	£2,627 0
J. Brown.....	2,726 5	H. J. Carter	2,573 0
H. R. Rons	2,685 0	Sheffield Bros. ..	2,557 0
Hammond & Son	2,643 0	S. E. Moss*	2,336 4
G. Prentis	2,633 0		

GRAYS (Essex).—For the erection of a dwelling-house in Orsett-road, Grays. Mr. Christopher M. Shiner, architect, 6, 7, and 8, Crutched Friars, E.C., and Grays, Essex :—

W. Potter £1,089	0	G. Prentis.....£1,040	0
G. Brown	1,075 10	Hammond & Son	1,034 0
J. J. Lawrence ..	1,041 15	J. Brown*	1,013 0

ILFORD.—For the erection of eight houses, Grove-road, Chadwell Heath, Essex, for Messrs. T. & A. Goodey. Messrs. Verlyck & Dunn, architects, Adelaide-chambers, Ilford, E. :—

C. Nortin £3,480	0	R. Stroud £2,239	12
F. Willmott	2,750 0	M. Pollhill.....	2,176 0
F. Gowen	2,720 0	A. Taylor	2,023 0
A. Symes.....	2,400 0	J. Gregory.....	2,000 0
A. H. Lovett	2,280 0	Thompson & Co.*	1,920 0

KESTON (Kent).—For additions, alterations, &c., at Woodside, for Mr. A. C. Norman, J.P. Messrs. Swan & Norman, architects, 8, Clifford's-inn, Temple Bar. Quantities by architects :—

Crossley & Son	£1,475	Johnson & Co.....	£1,300
F. G. Minter	1,423	Arnaud & Son.....	1,248
Smith & Sons	1,393	F. P. Duthoit*	1,181
Kiddle & Son	1,333		

LARGS (N.B.).—For the erection of clear water-well to hold 120,000 gallons, and various other works, for St. Andrew's District Committee of the County Council of Fifeshire. Mr. H. Bruce, C.E., 67, Crossgate, Cupar, Fife. Quantities by engineer :—

W. Caragher	£1,502 0 6	Mitchell & Son	£981 5 2
Morrison & Son	1,223 8 0	Brebner & Co.	913 18 1
J. Martin....	1,181 2 5	A. White	903 2 6
J. & J. Farmer	1,121 17 3½	John Mackay, Broughty Ferry*	854 17 9
W. Chalmers	1,077 0 0		
Mackay & Son	1,056 15 1		

LITTLE ILFORD.—For the erection of buildings for a crematorium at the City of London Cemetery, for the Corporation :—

B. E. Nightingale* £6,886 0 0
Supplying and Fixing Furnaces.
Symons, Ltd.*..... £660 10 0

LONDON.—For the demolition and rebuilding of premises, Nos. 16, 17, and 18, Union-street, and Nos. 1 and 2, Candover-street, W., exclusive of sanitary, electrical, and gasfitters' work. Messrs. H. Fuller Clark & Percy A. Boulting, architects, 30, John-street, Bedford-row, W.C. :—

Langdale & Hallett..	£9,800	Anbey & Son	£9,086
Burman & Sons	9,396	Smith & Co., Mount-street, W.*	8,950
Smith & Sons	9,163		
A. A. Webber	9,103		

LONDON.—For pulling down and re-erecting Nos. 372 and 374, Oxford-street, 2, 4, 6, James-street, and portions of 8, James-street and 14 and 15, Gee's-court, for Mr. J. S. Atkinson. Messrs. Willey & Gale, architects, 33, New Bridge-street, E.C. Quantities by Mr. Alfred Howard, 225, Strand, W.C. :—

Thompson & Beveridge.....	£12,698	Lawrence	£11,499
Martin, Well, & Co.	11,967	Kingerlee & Sons..	11,397
Carmichael.....	11,810	Hibberd	11,275
Patman & Fotheringham	11,523	Holliday & Greenwood.....	11,147
		Smith & Sons.....	11,111

LONDON.—For hydraulic penstocks and gear, Southern Outfall sewer enlargement, for the London County Council :—

Armstrong, Whitworth, & Co., Ltd.	£15,970	Blakeborough & Sons	£8,753
Waller & Son.....	11,975	Fullerton, Hodgart, & Barclay, Ltd. ..	8,328
Stewart & Co. (1902), Ltd.....	9,972	Glenfield & Kennedy, Ltd.*	8,020

LONDON.—For electric light and electric bell installations, Mile End Station, for the London County Council :—

Jackson Bros. ..	£345 8 0	Coleby & Co. ..	£305 0 0
Glover & Co. Ld.	330 0 0	Clark & Co.....	239 15 0
The National Electric Wiring Co. Ltd.	325 10 0	Sunderland & Co.	284 10 0
Drake & Gorham, Ld.	318 10 0	W. H. Johnson*	229 13 6

LONDON.—For forming cellar for storage, loading stages, &c., Gardener's-lane, Putney, S.W. Messrs. Foulsham and Herbert Riches, architects, 3, Crooked-lane, King William-street, London, E.C., and Bromley-by-Bow, E. Quantities supplied :—

Burman & Sons	£3,450	Courtney & Fairbairn	£3,147
F. & T. Thorne	3,350	Adamson & Sons ..	3,117
Todd & Newman ..	3,268	Green & Smith.....	3,105
Sheffield Bros.....	3,211	W. R. Williams* ..	2,997
Parsons & Co.....	3,166		

LONDON.—For repairs at the Clarendon Hotel, Tidal Basin, E. Messrs. Foulsham & Herbert Riches, architects, 3, Crooked-lane, King William-street, London, E.C., and Bromley-by-Bow, E. :—

J. T. Robey	£385	Osborn & Sons	£321
A. W. Derby	379	Salt & Sons*	315

LONDON.—For outside painting work and repairs at the Milkwood Tavern, Loughborough, S.E. Messrs. Foulsham & Herbert Riches, architects, 3, Crooked-lane, King William-street, London, E.C., and Bromley-by-Bow, E. :—

F. & H. F. Higgs....	£238	Courtney & Fairbairn.	£279
Osborn & Sons	285	J. Hooper*	264

LONDON.—For reinstating damage done by fire to stabling at Ilford, E. Messrs. Foulsham & Herbert Riches, architects, 3, Crooked-lane, King William-street, E.C., and Bromley-by-Bow, E. :—

Fred Willmott* £135

LONDON.—For addition to house, South Woodford, N.E. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, E.C. :—

Sheffield Bros.* £300

LONDON.—For decorations, &c., to house, Wanstead, N.E. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, E.C. :—

H. A. Barns*..... £183

LONDON.—For decorations to offices, Fenchurch-avenue, E.C. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, E.C. :—

Hawtrey & Sons*..... £120

PLYMOUTH.—For the construction of a covered reservoir, Blackadon Asylum, Wrangaton, for the Lunatic Asylum Committee. Mr. F. Hawarth, C.E., Municipal Buildings, Plymouth :—

A. N. Coles	£3,809 0 0!	E. Pike	£1,676 17 3
R. H. B. Neal	2,083 0 0	Lapthorn & Co., Plymouth*	1,625 0 0!
G. B. Andrews	1,867 17 11		
Dart & Pollard	1,691 0 0		

REIGATE.—For the erection of an addition to The Knowe, Reigate, Surrey, for Mr. W. Lawson Peacock. Mr. C. E. Salmon, architect, Bell-street, Reigate :—

A. B. Apted....	£498 16 3	Nightingale & Sons, Reigate*	£447 0 0
Bagaley & Sons	488 0 0		

STIFFORD (Essex).—For the alteration of the existing schools, a new infants' school, and two houses for the head-master and caretaker, for the Stifford School Board. Mr. Christopher M. Shiner, architect, 6, 7, and 8, Crutched Friars, E.C., and Grays, Essex :—

J. Brown £7,350	0 0	E. West £6,781	0 0
J. S. Hammond	7,050 0 0	H. R. Rons ..	6,697 0 0
Wm. Smith ..	6,977 0 0	S. E. Moss....	6,290 18 0
S. Parmenter	6,957 0 0	Pavitt & Son	6,225 12 8
Davey, Ltd...	6,914 0 0	C. Watt	6,050 0 0
Wm. Potter ..	6,842 0 0	H. J. Carter*	5,755 0 0

TILBURY.—Shop, Tilbury. Mr. C. M. Shiner, architect, London :—

J. J. Lawrence	£415	J. Brown	£329
S. E. Moss	385	G. Brown*	315

TILBURY DOCK (Essex).—For the erection of five shops in Dock-road, Tilbury Dock. Mr. Christopher M. Shiner, architect, 6, 7, and 8, Crutched Friars, E.C., and Grays, Essex :—

J. S. Hammond..	£2,389 0	J. J. Lawrence ..	£1,925 0
S. E. Moss.....	2,060 15	G. Brown*	1,675 0
J. Brown.....	1,974 0		

WALLINGTON.—For villa, Grosvenor-avenue, Wallington, for Mr. J. Garstone. Mr. Arthur L. Dartnell, architect and surveyor, 62, High-street, Croydon :—

Page & Son	£995 0	W. Martin	£670 10
Simmonds & Co. ..	950 0	Truett & Steel	610 0
Cronk & Richardson	787 0	W. Roberts*	599 0

WALLINGTON. — For pair of villas, Grosvenor-avenue, Wallington, for Mr. F. Flatman. Mr. Arthur L. Dartnell, architect and surveyor, 62, High-street, Croydon :—

Simmonds & Co.	£1,050	W. Roberts	£900
Smart & Son.....	994	Truett & Steel*	880
W. Gowman.....	967	Cronk & Richardson..	792

LONDON SCHOOL BOARD TENDERS

At the last meeting of the London School Board the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's Architect :—

* *Recommended for acceptance.*

BUILDING IN OLD KENT-ROAD (to be known as the Townsend-street School for the Deaf).—Adaptation of premises for various purposes. Plans have been prepared for adapting these premises for the following purposes :—(*a*) Ground floor—(i.) Physically Defective Centre consisting of three classrooms, with hall 30 ft. by 26 ft. (In lieu of the Centre previously proposed to be provided at the Surrey-square School) ; (ii.) Rooms for the accommodation of the Official Correspondent for the Southwark Division. (*b*) First floor—Day Centre for Deaf Children consisting of seven classrooms, with hall 34 ft. by 26 ft. (in lieu of accommodation previously proposed to be provided in connexion with the Pocock-street and "Alma" Schools). (*c*) Second floor—Rooms for the Divisional Superintendent and Staff, and office for the local clerk of works for repairs (the office of the clerk of works is at present situated in the Townsend-street School). (*d*) Third floor—Storerooms. (*e*) Portion of the basement to be adapted for the accommodation of the caretaker :—

Lathey Bros.	Schedule + 17½ per cent.	
Johnson & Co.	Schedule + 10 „ „	
Marsland & Sons	Schedule + 5 „ „	
W. Downs		£4,887
J. & C. Bowyer		4,160
Hooper & Son		3,965
Bulled & Co.*		3,885

CHELSEA (Ashburnam).—Accommodation : boys, 150 ; girls, 150 ; total, 300. Senior school of two stories on arches, and playground for boys on top of school. Halls : boys', 46 ft. 6 in. by 26 ft. ; girls', 46 ft. 6 in. by 26 ft. Classrooms : boys', 40, 40, 40, 30 ; girls', 40, 40, 40, 30. Removing old cookery centre and providing a new centre. Heating by low-pressure hot-water apparatus. Removing girls' and infants' water-closets and rebuilding them. Providing wash-house and water-closet for schoolkeeper :—

		†
Martin, Wells, & Co., Ltd.	£11,814	+ £200
General Builders, Ltd.	10,595	+ 103
Patman and Fotheringham, Ltd.	10,393	+ 175
Gough & Co.....	10,273	+ 140
Treasure & Son	10,177	+ 138
Leslie & Co., Ltd.	10,167	+ 151
King & Son	10,157	+ 131
Spencer, Santo, & Co., Ltd. ..	9,995	+ 180
E. Triggs	9,940	+ 177
Johnson & Co., Ltd.	9,922	+ 170
J. & M. Patrick	9,583	+ 134
Stimpson & Co.*	9,500	+ 164

† If walls of classrooms and halls are plastered, add.

CHELSEA (Beaufort House).—Accommodation boys 250 ; girls, 250 ; infants, 252 ; total, 752. Graded school, on three stories. Halls : boys', 50 ft. 9 in. by 26 ft. 4½ in. ; girls', 50 ft. by 26 ft. 4½ in. : infants', 50 ft. by 26 ft. Class-rooms : boys', 56, 50, 48, 48, 48 ; girls', 56, 50, 48, 48, 48 ; infants', 56, 50, 50, 48, 48. Drawing classroom and science room, 1,070 ft. area. Heating by low-pressure hot-water apparatus. Schoolkeeper's house :—

Leslie & Co., Ltd. .	£20,142	Garrett & Son	£18,638
Appleby & Sons....	19,570	King & Son.....	18,620
McCormick & Sons	19,545	C. F. Kearley.....	18,618
Longley & Co.	19,536	Marsland & Sons ..	18,551
Treasure & Son....	19,184	Johnson & Co., Ltd.	18,532
Holloway Bros. (London), Ltd. ..	18,805	F. & H. F. Higgs..	18,398
		J. & C. Bowyer....	18,205
Martin, Wells, & Co., Ltd.....	18,747	Lawrance & Sons ..	18,289
		W. Downs	18,173
Macey & Sons, Ltd.	18,700	J. & M. Patrick....	17,948
Lathey Bros.	18,692	Stimpson & Co.* ..	17,900

CITY (Gravel-lane).—Building an additional story to house at present occupied by laundry centre and schoolkeeper in order to provide accommodation for a housewifery centre :—

Staines & Son	£929	Williams & Son	£710
F. & F. J. Wood ...	797	Johnson & Co.*	593
T. L. Green.....	779		

COLLEGE-LANE, HOMERTON.—For adaptation of ground floor of back building for physically defective children. The front building on the Homerton College site in the possession of the Board facing High-street, Homerton, is at present being used as a residential deaf school. The back building on the site, which has a frontage to College-lane, is at present being used as a manual training room with a gymnasium on the ground floor, and a deaf centre, consisting of six classrooms on the first floor. The Board instructed the Works Committee to adapt the ground floor of this latter building as a centre for physically defective children, consisting of two classrooms for twenty children each, a manual-room for the deaf children, and a hall 60 ft. by 27 ft., at a total estimated cost of 690*l*. The plans of these works include also the provision of new offices and urinal for the cripple children, new entrance porches, partitions to form enclosures for kitchen and lavatories on both ground and first floors ; open fire stoves for warming the rooms, altering boundary-wall in order to form approach and entrance for ambulance :—

Marchant & Hirst ..	£1,976	Belcher & Co., Ltd.	£1,498
G. Barker	1,938	Lawrance & Sons ..	1,487
H. Groves.....	1,900	Williams & Sons	1,410
Stevens Bros.	1,834	J. Stewart*	1,360

GREENWICH (Stanley-street).—Rebuilding the male and female infants' offices, refitting urinal and girls' offices, refitting boys' offices on roof playground, and providing new drainage scheme to the old portion of the school building :—

Martin, Wells, & Co., Ltd.....	£3,140	0	0
Ashby & Horner	3,100	0	0
Johnson & Co.	3,045	0	0
G. Parker	2,934	0	0
R. P. Beattie.....	2,933	3	7
J. & C. Bowyer.....	2,879	0	0
W. V. Goad	2,825	0	0
Leney & Son	2,720	0	0
W. Downs*	2,567	0	0
Falkner & Sons.....	1,997	0	0

HACKNEY (Tottenham-road).—Providing and fixing auxiliary heating in each of the eleven classrooms of the P.T. and J.M. departments, with the necessary main and connexions, forming a scheme of auxiliary heating throughout the school, with the exception of the halls :—

The Brightside Foundry and Engineering Co., Ltd.	£212 0	J. Grundy	£170 0
Stevens & Sons	206 0	G. & E. Bradley	169 0
Esson & Son	205 10	J. Wontner-Smith, Gray, & Co.	155 0
Palowkar & Sons	179 6	Duffield & Sons, Slough*	144 0
Bates & Sons	174 0		

JESSOP-ROAD SCHOOL, HERNE HILL.—For partitions, &c., in boys' and girls' departments :—

J. F. Ford	£738	Garrett & Sons	£538
Maxwell Bros., Ltd.	639	J. & C. Bowyer	529
Lathey Bros.	597	Bulled & Co.	497
G. Kemp	588	E. Triggs*	434

MARYLEBONE (Cromer-street School).—Accommodation : Boys' and girls' (mixed), total, 296. Hall : boys' and girls', 51 ft. by 25 ft. Classrooms : boys' and girls', 60, 56, 50, 50, 40, 40. Drawing classroom, 633 ft. area. Science-room, 593 ft. area. School for mentally defective children, three classrooms of 20 each. Hall, 21 ft. by 24 ft. Heating by low-pressure hot-water apparatus. Existing house to be retained for use of school-keeper :—

Miskin & Sons	£13,779	0	0
Gregar & Son	13,255	0	0
Grover & Son	13,216	0	0
T. L. Green	13,177	0	0
L. H. & R. Roberts	13,156	0	0
F. & H. F. Higgs	13,150	0	0
W. M. Dabbs	13,126	0	0
C. Cox	13,108	0	0
Williams & Son	13,068	0	0
Macey & Sons, Ltd.	13,058	0	0
F. & F. J. Wood	13,042	0	0
Simpson & Son	13,023	0	0
A. Porter	12,982	12	8
McCormick & Sons	12,789	0	0
Lawrance & Sons	12,764	0	0
Patman & Fotheringham, Ltd.	12,713	0	0
Treasure & Son	12,460	0	0
Chessum & Sons*	12,382	10	0

ST. BARTHOLOMEW'S (Temporary).—Cleaning and painting :—

G. Wales	£329 6	A. Porter*	£193 0
Dearing & Son	279 0	T. Wilson	185 0
Macey & Sons, Ltd.	238 0		

SOUTHWARK (Page's-walk).—Providing and planting trees and shrubs, &c. :—

J. Russell	£89 10 0	W. C. Benedict	£64 10 0
R. Neal	71 10 6	G. Footer*	25 19 6

TOWER HAMLETS (Dalgleish-street).—Enlargement (66) and improvements. Providing halls for each department, 44 ft. by 24 ft. 3 in. ; new staircase for girls ; providing new cloakrooms and lavatories and teachers' rooms for each department ; providing new classroom of 48 for boys and girls and one classroom of 54 for the infants ; re-stepping one classroom for boys and girls ; providing new covered playgrounds for boys, girls, and infants. Revised accommodation : boys, 284 ; girls, 284 ; infants, 299 ; total, 867 :—

F. & H. F. Higgs	£7,965	Chessum & Sons	£7,045
Munday & Sons	7,939	McCormick & Sons	6,991
Perry & Co.	7,718	Bulled & Co.	6,859
Holliday & Greenwood, Ltd.	7,712	Johnson & Co.	6,813
Gregar & Son	7,684	Wallis & Sons	6,666
Lawrance & Sons	7,517	J. & C. Bowyer	6,593
Longley & Co.	7,517	Greenwood, Ltd.	6,388
Treasure & Son	7,125	T. D. Leng*	6,379

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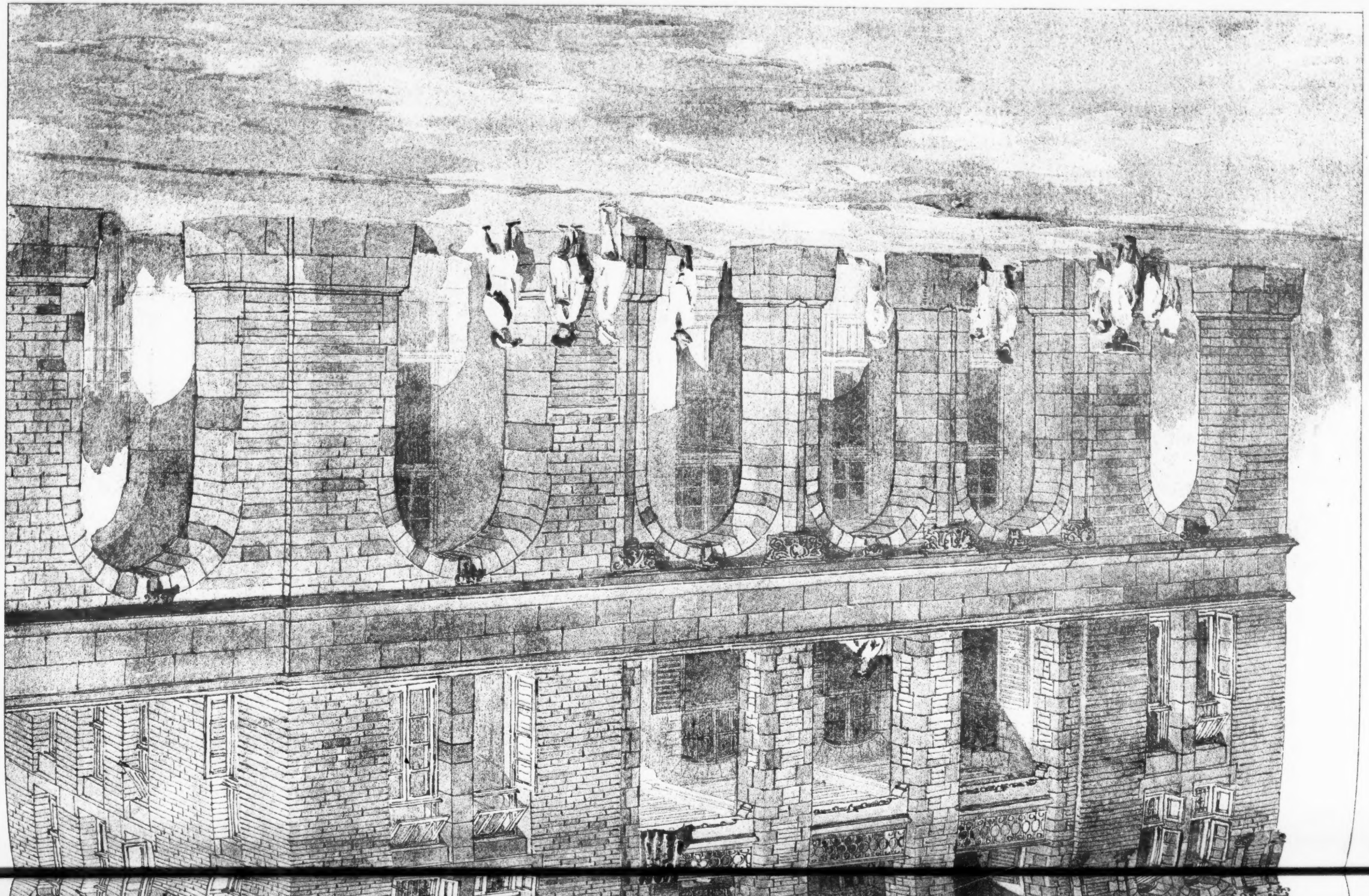

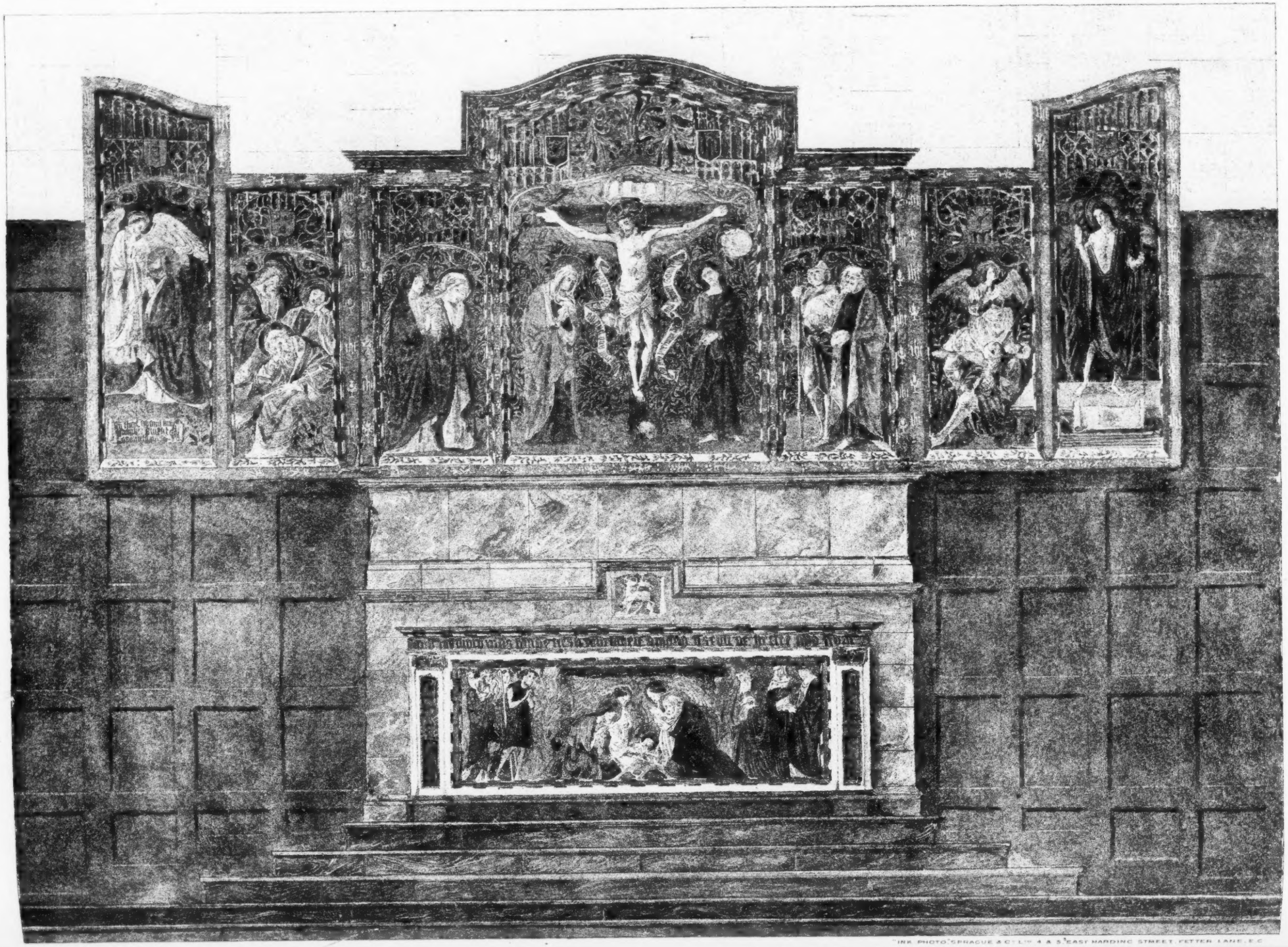

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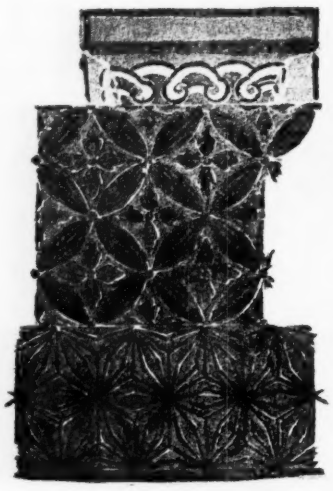

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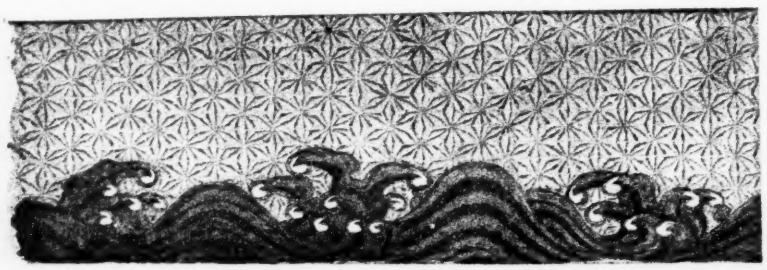

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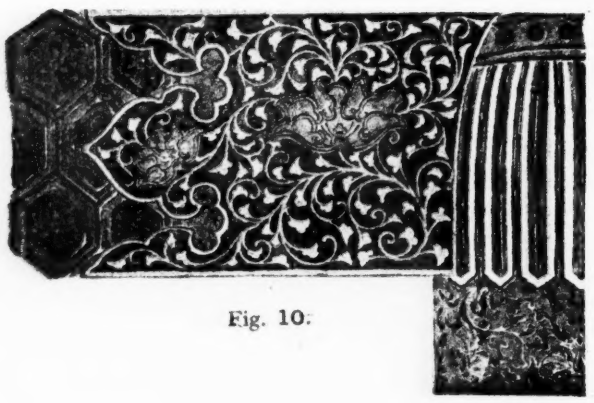

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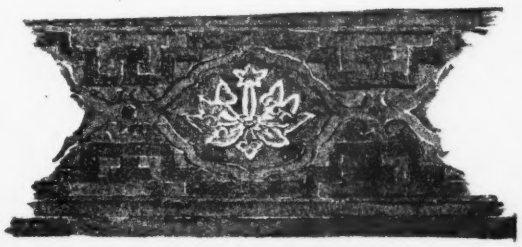

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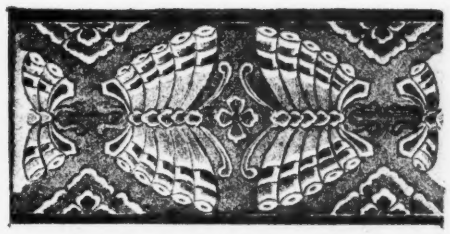

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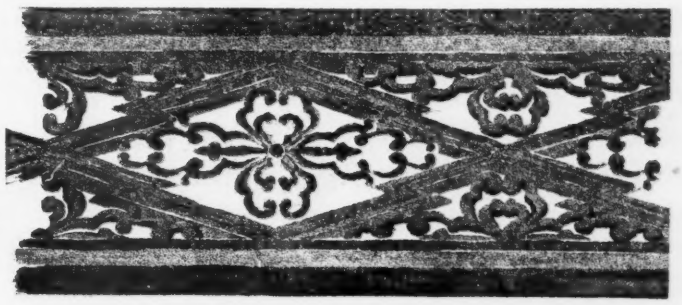

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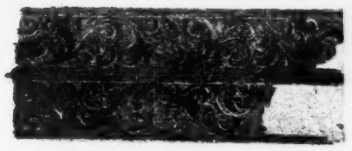

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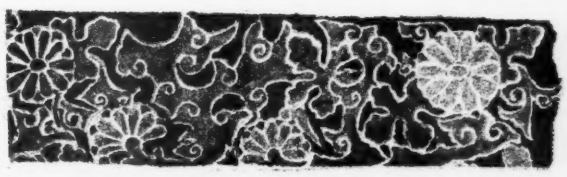

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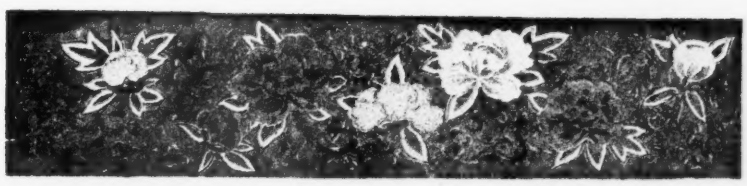

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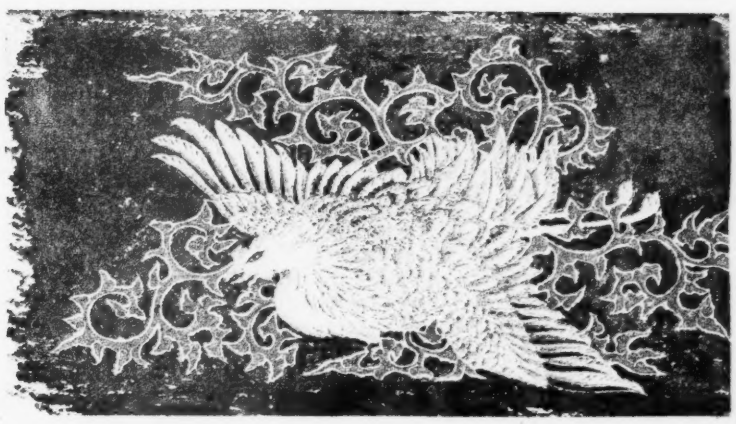

Fig. 19.

Fig. 13.

Fig. 23.

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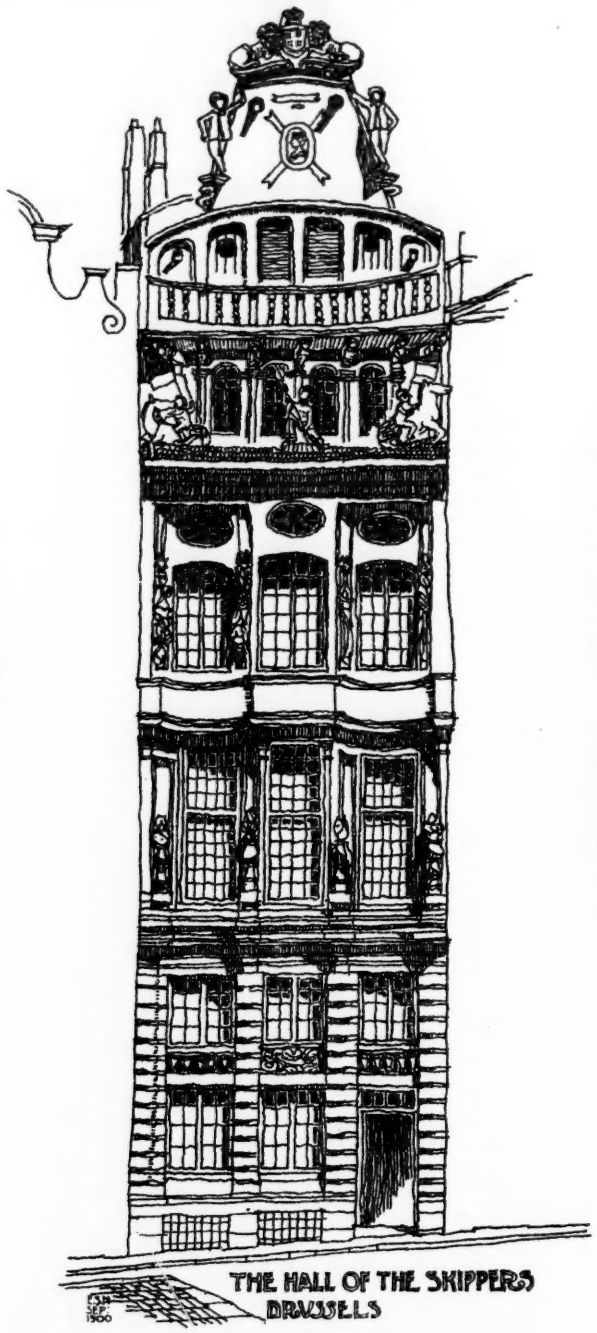

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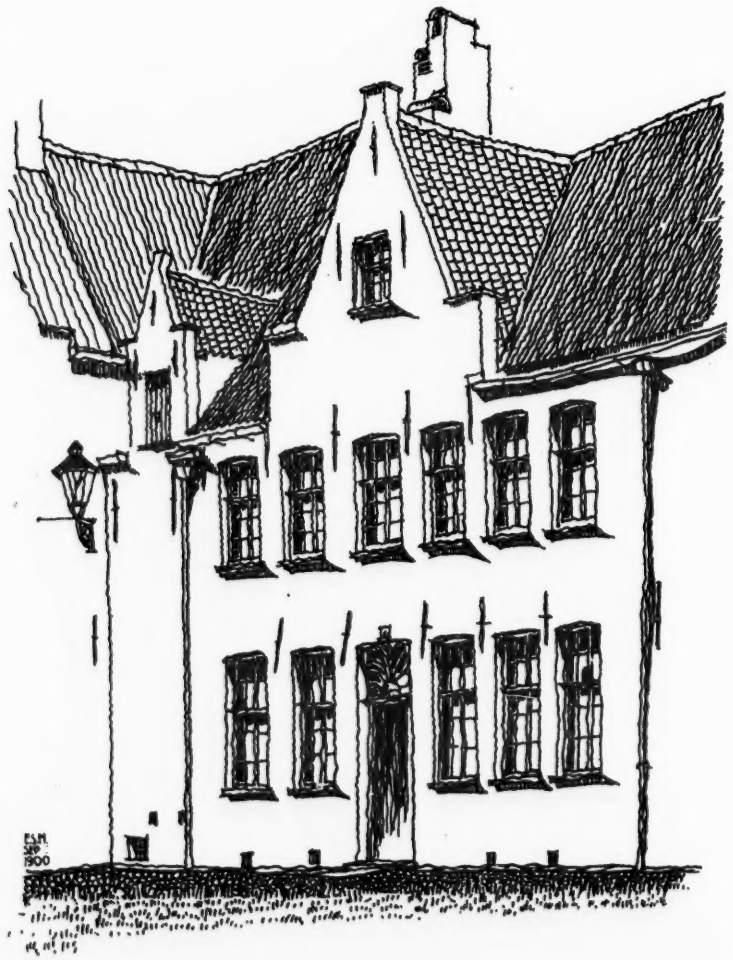

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